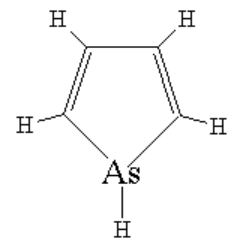
1. Molecules with Silly or Unusual Names

Arsole



Yes, believe it or not, there is actually a molecule called *Arsole*... and it's a ring! It is the arsenic equivalent of *pyrrole*, and although it is rarely found in its pure form, it is occasionally seen as a sidegroup in the form of organic *arsolyls*. For more information, see the paper with probably the best title of any scientific publication I've ever come across: "Studies on the Chemistry of the Arsoles"[1].

Contrary to popular belief, new research[2] shows that *arsoles* are only moderately aromatic... Incidentally US patent number US 3 412 119 by the Dow Chemical Company is entitled "Substituted Stannoles, Phospholes, Arsoles, and Stiboles" - I didn't know there was a substitute for an *arsole*... Furthermore, the structure where *arsole* is fused to a *benzene* ring is called *benzarsole*, and apparently when it's fused to 6 *benzenes* it would be called *sexibenzarsole* (although that molecule hasn't been synthesised yet). Two other poisonous arsenic molecules include the simple hydrides, called *arsine* (AsH_3) and *arsorane* (AsH_5).

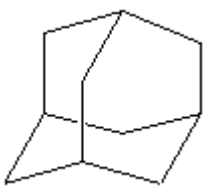
And on a related theme, there's an *aryl selenide* compound with the superb shorthand of *ArSe*, which is both toxic and smelly. The paper it comes from[3] was published by authors from, of course, the University of Aarhus!

Also, the related molecule, *phosphole* (which just replaces As with P) is quite amusing if you are a French speaker, since it's pronounced the same as *fausse folle*, where *fausse* means 'false' or fake' and *folle* means both a 'crazy woman' and a 'drag-queen' or 'ladyboy'.

Adamantane

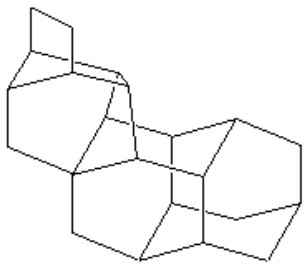
Adam Ant in the 1980s
(Copyright Getty Images, used with permission
Photo: Chris Walter) .

This molecule always brings a smile to the lips of chemistry students when they first hear its name, especially in the UK. For those not in the know, ***Adam Ant*** was an English pop star in the early 1980's famous for silly songs and strange make-up.



Two *adamantanes* fused together make *diamantane*, which was originally known as *congressane* since its synthesis was announced at an IUPAC congress in the 1960s. the name was changed since there are lots of congresses, and it seemed a bit silly to name this chemical after just one of them – or maybe IUPAC looked up the word 'congress' in the dictionary [4] and were worried about its alternative meaning…

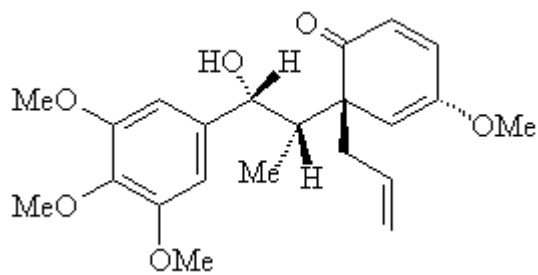
Bastardane



This is actually a close relative of *adamantane*, and its proper name is *ethano-bridged noradamantane*. However, because it had the unusual *ethano* bridge, and was therefore a variation from the standard types of *diamondoid* hydrocarbon cage structures, it came to be known as *bastardane* - the "unwanted child" [5].

In fact, the paper where it was first reported was entitled "Nonacyclodocosane, a Bastard Tetramantane" [6].

Megaphone

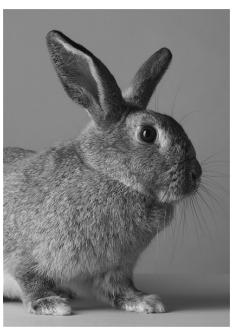


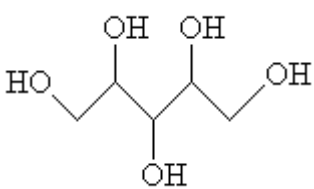
Is this perhaps the loudest molecule of all? Despite having a ridiculous name, the molecule is quite ordinary. It gets its name from being both a constituent of *Aniba Megaphylla* roots and a ketone[7].

Unununium

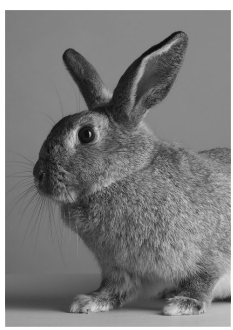
I know this is technically an element, not a molecule, but it had such a ridiculous name I thought I'd include it. This is actually element number 111, and was called *unununium* by the IUPAC temporary systematic name[8] before it was recently renamed *roentgenium*. This is a pity, because if it formed ring or cage structures, previously we might have ended up with *unununium* onions...

Arabitol





(Rabbit photos copyright Getty Images, used with permission. Photographer Jo Sax).

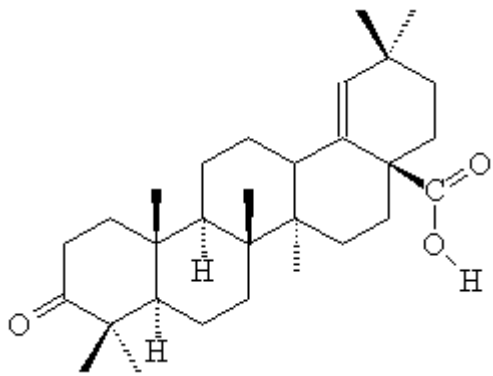


No, this has nothing to do with rabbits - it's an organic alcohol that's one constituent of wine. It's also known as *pentahydric alcohol*. A related sugar molecule, *arabinose*, also has nothing to do with rabbits, nor with the size of a Rabbi's nose (A Rabbi Nose).

Moronic Acid

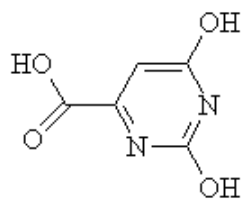
This is a *triterpenoid* organic acid that is found in *Pistacia* resin, and is therefore of interest to people studying archaeological relics, shipwrecks and the contents of ancient Egyptian jars.[9] I'm not sure how it gets its stupid name, but maybe it was first extracted from Mulberry trees (*Morus*). Derivatives of this are called *moronates*, as in 'which moron-ate the contents of this jar?'

Maybe he's been eating too much moronic acid...
(Copyright Getty Images, used with permission.
Photo: Christopher Thomas).

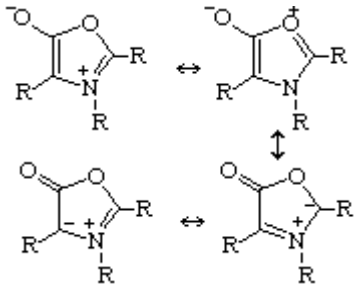


Erotic Acid

Unfortunately, this isn't the world's best aphrodisiac. Its correct name is *orotic acid*, but it has been misspelled so often in the chemical literature that it is also known as *erotic acid*! Another name for it is *vitamin B13*. Apparently, if you add another carbon to it, it becomes *homo-erotic acid*...



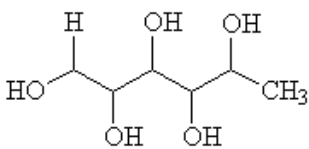
Munchnones



No, these aren't the favourite compound of the *Munchkins* from *The Wizard of Oz*, but are in fact a type of *mesoionic* compound. These are ring structures in which the positive and negative charges are delocalised, and which cannot be represented satisfactorily by any one polar structure. They got their name when the chemist[10] who first synthesized them called them after the city Munich (München), after similar compounds were called *sydnones* after Sydney.

Munchkins present Judy Garland with a lollipop (and not a *munchnone*) in the film 'The Wizard of Oz'.

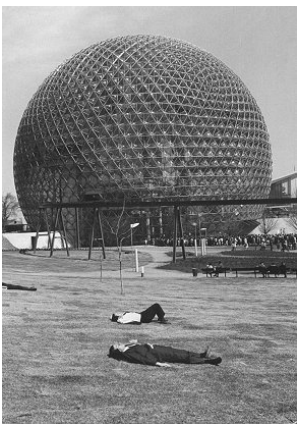
Fucitol



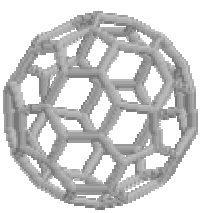
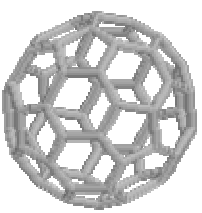
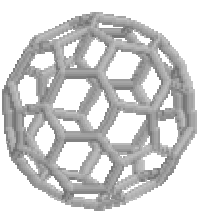
Although this sounds like what an undergraduate chemist might exclaim when their synthesis goes wrong, it's actually an alcohol, whose other names are *L-fuc-ol* or 1-*deoxy-D-galactitol*. It gets its wonderful trivial name from the fact that it is derived from the sugar *fucose*, which comes from a seaweed found in the North Atlantic called 'Bladderwrack' whose Latin name is *Fucus vesiculosis*.

Buckminsterfullerene

This is the famous soccerball-shaped molecule that won its discoverers' the Nobel prize for Chemistry in 1996. It is named after the architect Buckminster Fuller who designed the geodesic dome exhibited at Expo '67 in Montreal. It was from this building that Sir Harry Kroto got the idea how 60 carbon atoms could be arranged in a perfectly symmetrical fashion. Because the name of the molecule is a bit of a mouthful, it is often referred to just as a *Bucky Ball*.



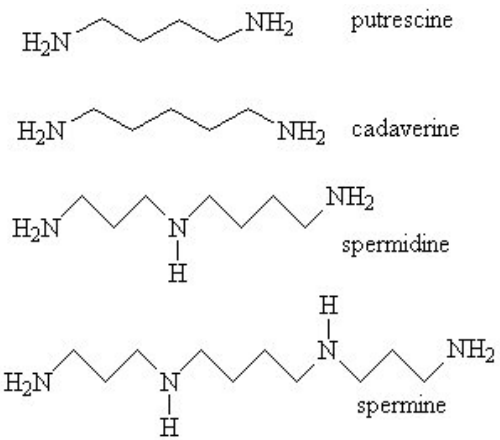
Buckminster Fuller's geodesic dome at Expo '67 in Montreal.

It's also known as *footballene* by some researchers [11]. In fact, there is now a whole '*fullerene zoo*', with oddly coined names[12], including: *buckybabies* (C_{32}, C_{44}, C_{50}, C_{58}), *rugby ball* (C_{70}), *giant fullerenes* (C_{240}, C_{540}, C_{960}), *Russian egg* or *bucky onions* (balls within balls), *fuzzyball* ($C_{60}H_{60}$), *bunnyball* ($C_{60}(OsO_4)$(4-*t-butylpyridine*)$_2$), *platinum-burr ball* ($\{[(C_2H_5)_3P]_2Pt\}_6C_{60}$) and *hetero-fullerenes* (in which some carbons are replaced by other atoms).

There is also a *fullerene* paper in which the authors describe a method for severing two adjacent bonds in C_{60}, entitled "There Is a Hole in My Bucky".[13]

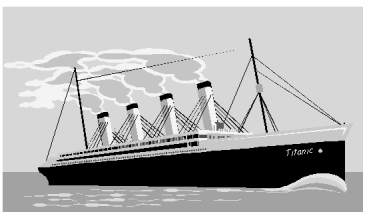
Putrescine, Cadaverine, Spermine & Spermidine



Putrescine originates in putrefying and rotting flesh, and is quite literally, the smell of death. It is one of the breakdown products of some of the *amino-acids* found in animals, including humans. Although *putrescine* is a poisonous solid, as flesh decays its vapour pressure becomes sufficiently large to allow its disgusting odour to be detected. It is usually accompanied by a poisonous syrupy liquid with an equally disgusting smell called *cadaverine* (named after the cadavers that give rise to it). Surprisingly, both these molecules of death also contribute towards the smells of some living processes. Since they are both poisonous, the body normally excretes them in whatever way is quickest and most convenient. For example, the odour of bad breath and urine are 'enhanced' by the presence of these molecules, as is the 'fishy' smell of the discharge from the female medical condition *bacterial vaginosis*. *Putrescine* and *cadaverine* also contribute to the distinctive smell of semen, which also contains the related molecules *spermine* and *spermidine*. So sex and death are indeed, closely related.

Curious Chloride and Titanic Chloride

The trivial name for some curium compounds can be either *curous* or *curious*, so *curium trichloride* becomes *curious chloride*. However the only curious property it has is that it's sufficiently radioactive that a solution, if concentrated enough, will boil spontaneously after a while. (I wonder if a molecule with 2 Cm atoms in would be called *bi-curious*...?)



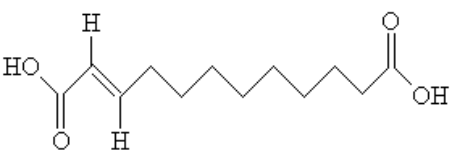
In a similar way, titanium compounds can be *titanic*, so we get the wonderfully named *titanic chloride*, $TiCl_4$. In the titanium industry, $TiCl_4$ is often known as 'tickle'.

Furthermore, *curium oxides* are called *curates*, so the titanium compound would be *titanic curate* (a huge vicar?), and since curium can have more than one valency we could end up with *curious curates*. But I'm sure these are already a well-known phenomenon...

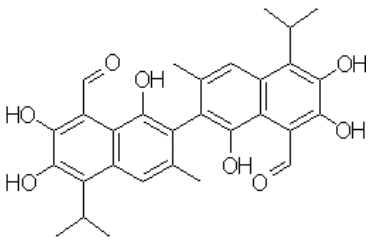
In a similar way, some nickel compounds can be referred to as *nickelous* - so we get compounds like *nickelous sulfate* (a nice guy by all accounts…).

Traumatic acid

This is a plant hormone which causes injured cells to divide and help repair the trauma - hence its name, and its synonym 'wound hormone'.



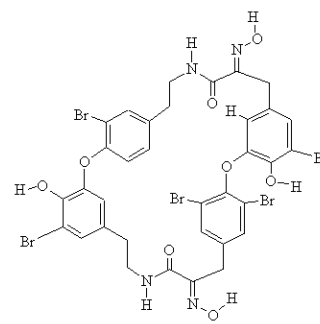
Gossypol



This ridiculously named molecule is found in cotton seeds. It was used as a male contraceptive in China, but was never used in the West (and may have since been banned in China as well), since its effects were permanent in about 20% of patients! Its name originated from being present in the flowers of the Indian cotton plant *Gossypium herbaceum L.*

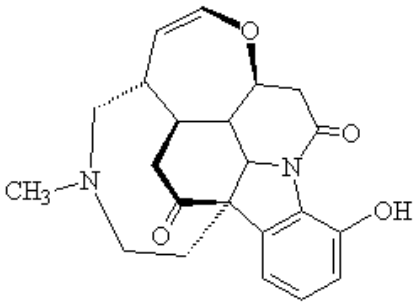
Apart from its contraceptive effects, *gossypol* has properties that might make it useful in treating a number of ailments, including cancer, HIV, malaria and some bacterial/viral illnesses. Related to this molecule are the equally strangely named *gossypetin* and *gossypin*. I always thought *gossypin* was frowned upon in polite labs....

Bastadin-5



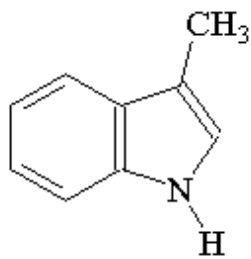
This is just one of a number of *bastadins*, which are molecules isolated from the marine sponge *Ianthella basta*[14]. They possess antibacterial, cytotoxic and anti-inflammatory properties.

Vomicine



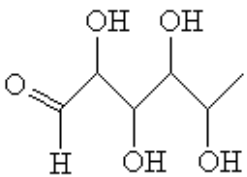
This poisonous molecule gets its name from the nut *Nux Vomica*, which is the seed of a tree found on the coasts of the East Indies. The seeds are sometimes called 'Quaker buttons', and are a source of *strychnine* as well as the emetic *vomicine*.

Skatole



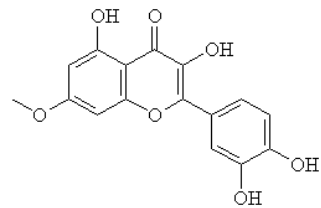
This molecule's name comes from the Greek for manure (*skor*). Its proper name is 3-*methylindole*, but it gets its trivial name from the fact that it is a component of feces. Surprisingly, it is also found in coal tar and beetroot (!), and can be obtained synthetically by mixing egg albumin and KOH. As you might guess, *skatole* consists of white to brownish scales which are soluble in hot water. Apparently, coriander can be used to cover up bad smells such as these, as testified in the classic paper by Kohara *et al*: "Deodorizing Effect of Coriander on the Offensive Odor of the Porcine Large Intestine." [15]

Rhamnose and Rhamnetin

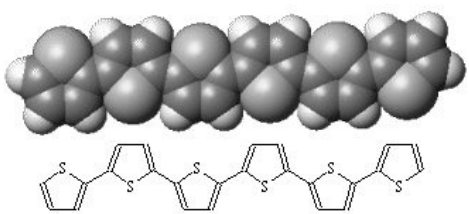


Rhamnose sounds like the molecule that's created when you walk into doors...in fact it's a type of sugar. It's made by hydrolysis of a *glucoside* found in buckthorn berries. The Greek for buckthorn berry is *rhamn*, and the *-ose* is because it's a sugar.

From the same berry (*Rhamnus cathartica*) comes *rhamnetin*. This molecule with an amusingly double-entendre name (ram'n it in) is a yellow pigment used in the dye industry.



Sexithiophene

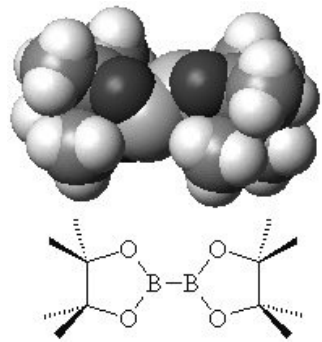


This is a 'sexi' molecule - which means it has 6 sub-units, in this case of *thiophene* rings.

Because of its conjugated system of double bonds, this organic molecule conducts electricity quite well. As a result, it is one of a number of similar molecules being studied for possible uses in organic polymer electronics. Incidentally, the Latin for 5 sub-units is *quinque* (pronounced 'kinky'), so by adding one subunit a *quinque* molecule becomes *sexi*... Nine units would be called *nonakis-*, which shows what always happens if you try to take things too far!

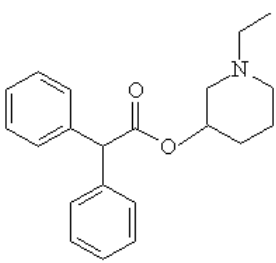
Bis(pinacolato)diboron

A real *pina colada*
(Copyright Getty Images, used with permission. Photo: Andy Caulfield).



Although it sounds like it, this isn't the active ingredient in a *pina colada* cocktail. Rather, it is a versatile reagent for the preparation of *boronic esters* from *halides*, the diboration of *olefins*, and solid-phase Suzuki coupling [16]. The name comes about since it's a derivative of the molecule *pinacol*. Incidentally, a proper *pina colada* cocktail is a concoction of pineapple juice, coconut milk and rum, often served with crushed ice and a little paper umbrella stuck in the glass.

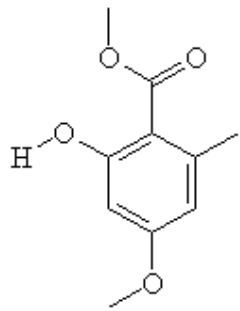
Crapinon



Crapinon (also known as *Sanzen*) is another molecule with an excellent name, and is apparently used therapeutically as an anticholinergic. These are drugs which dry secretions, increase heart rate, and decrease lung constriction. More importantly, they also constipate quite strongly - so 'crappy-non' is most appropriate.

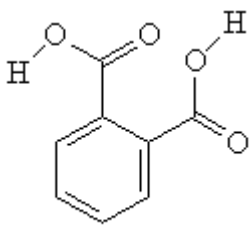
It would be nice to think that this molecule could find an alternative use as a toilet cleaner (as in "Who's been crapinon the seat?").

Sparassol

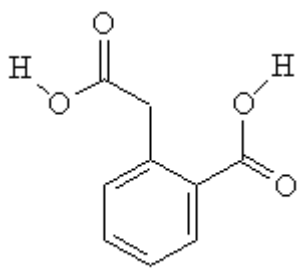


This molecule sounds like what you'd need the day after eating a very hot curry (a spare-assol). *Sparassol* is an antibiotic produced by the fungus *Sparassis ramose*, which gets its name from the Greek word *sparassein* meaning to tear or rend. Maybe this is the origin of the phrase 'to tear someone a *sparassol*'?

Phthalic Acid



Phthalic acid



Homo-phthalic acid

This molecule is often pronounced with a silent 'th' for comic effect. I wonder if *phthalyl* side-groups have a shorthand symbol in chemical structures, in the same way that *phenyl* groups are shortened to -Ph? If so, would it be a *phthalic symbol*...? Again, adding an extra carbon makes *homo-phthalic acid* - say no more...

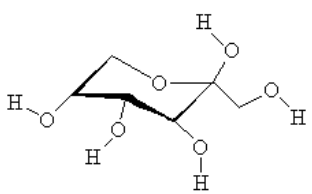
Periodic Acid

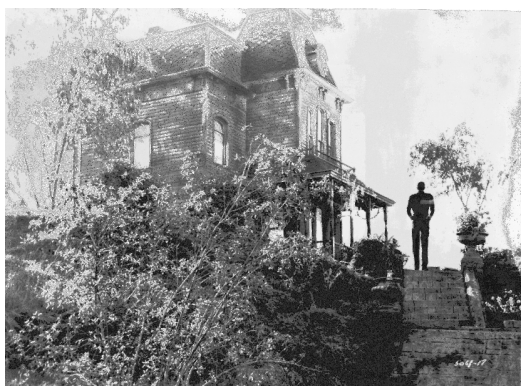
H_5IO_6

Ok, I know it should really be *per-iodic acid*, but without the hyphen it sounds like it only works some of the time... It has also been described as the acid that is extracted after boiling down old Periodic Tables found in chemistry lecture halls and laboratories.

Psicose

This molecule has nothing to do with Norman Bates, but is a sugar which gets its name because it's isolated from the antibiotic *psicofurania*. Its other name is *ribo-hexulose*.

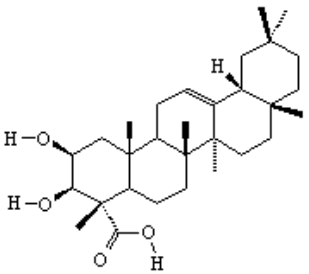




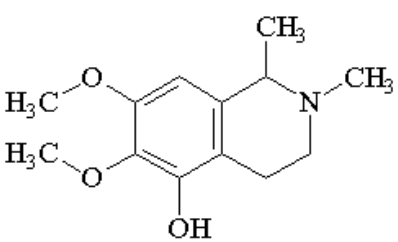
The Bates' Motel from the film 'Psycho'.

Commic Acid

This molecule's always good for a laugh! It gets its 'commical' name since it's a constituent of the plant *Commiphora pyracanthoides*, one of the Myrrh trees [17]. When reduced to the *aldehyde,* I presume the product would be named *commical*?



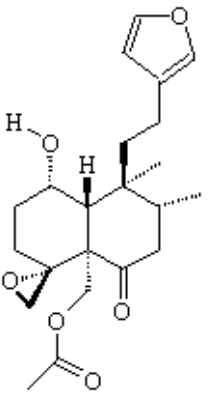
Gigantine



A Lilliputian needs some *gigantine* to keep up with Gulliver…

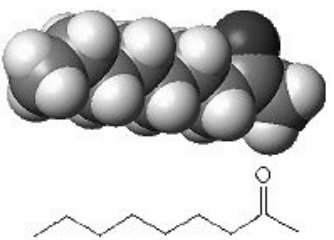
This chemical comes in very, very large bottles! It's from the cactus *Carnegia gigantea* [18], and is a hallucinogen - so perhaps it just makes everything appear gigantic.

Fruticolone



This sounds like what you get after a baked bean meal...but it actually gets its name from being both a constituent of the plant *Teucrium fruiticans* and a ketone [19]. There's also a variant of this called *isofruticolone*.

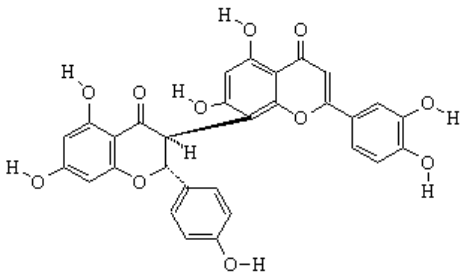
Nonanone



Although maybe not quite as silly as some of the other molecular names, I like this one for its n-n-nice alliteration. Many *nonanones* act as alarm pheremones in wasps, ants and bees.

Interestingly, in Danish, Norwegian, Swedish and German molecular names are spelt without the end "e" (*e.g. butane* is *butan*, *etc.*). Therefore, *nonanone* becomes '*nonanon*', and is quite an exceptional molecule name, being spelled the same way forwards and backwards - a palindromic molecule! The molecule shown is 2-*nonanone*, but 5-*nonanone* with the C=O group in the middle would be the same forwards as well as backwards, thus being palindromic in spelling and in structure!

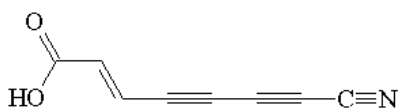
Fukugetin



This chemical with a most amusing name is also called *morellofavone*, and is a constituent of the bark of the *Garcenia* species of tree [20]. Its glucoside goes by the equally wonderful name of *fukugiside*.

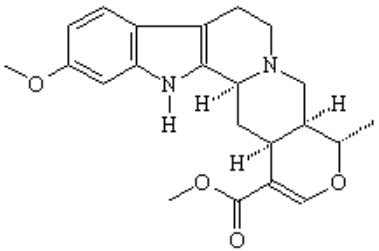
Nudic Acid

A molecule for naturists? This is an antibiotic derived from mushrooms, one of which (*Tricholomo nudus*) was the origin of its name [21].



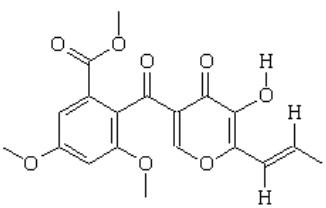
Right: Michelangelo's statue of David.
(Photo: David Gaya [22]).

Pubescine



Also known as *reserpinine*, it got its name since it was extracted from the plant *Vinca pubescens*[23]. I don't know much else about *pubescine*, but I bet it forms short, curly crystals...

Funicone



This gets its name, not from being funny and cone-shaped, but because it's the metabolism product of the fungus *Penicillium funiculosum*.

Powder of Algaroth

This sounds like one of Harry Potter's wizardly potions, and is the archaic name for *antimony oxychloride* (SbOCl). It was named after the Italian chemist Vittorio Algarotti who discovered its use as a medical emetic which purges violently both 'upwards' and 'downwards'… Perfect for a party prank, then…

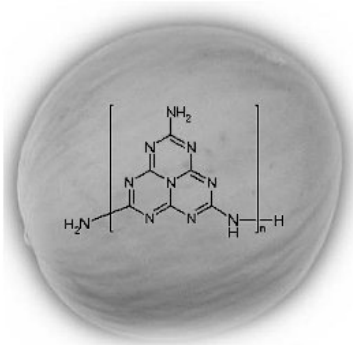
Didymium

Nd + Pr
Pr + Nd
Nd + Pr

This is another old term, this time for a mixture of neodymium and praseodymium, which, due to their similar chemical properties were inseparable for many decades. The name comes from the Greek word for twin (*didymos*).

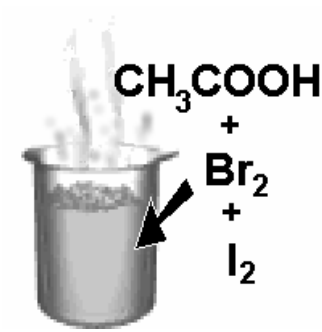
Melon

Melon is a flame-retardant chemical. Its name is coined by variation from that of a similar molecule called *melem*, which got its name from another similar molecule *melamine*, which got its name from *melam*, which was just an arbitrary name! Would an aqueous solution of *melon* be called a *water-melon*?



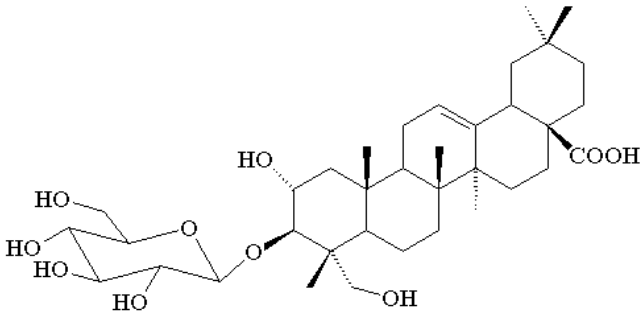
Melon drawn on a melon.
(Photo of melon: Knutux [24])

Hanuš Reagent



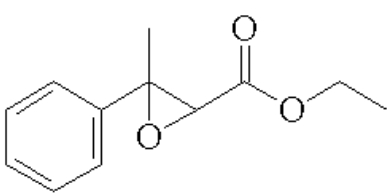
Dudes, this reagent is, like, totally heinous! It's, like, a totally equimolar mixture of *iodine* and *bromine* in *glacial acetic acid*, named after the most excellent, and definitely non-heinous Czech chemist Josef Hanuš. It's used to measure the unsaturation (number of double bonds) in organic substances. Radical !

Saponin



This soapy molecule gives rise to a classic chemists' greeting: "Hey, what's *saponin*?" There are many types of *saponins* found in various plants. They get their name from *sapon* meaning 'soap' in Latin, due to the fact they form a stable soapy froth when mixed with water. The one shown above is called 3-*O*-β-*glucopyranosyl arjunolic acid*.

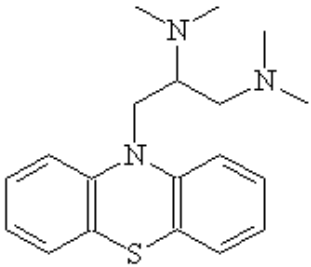
Strawberry Aldehyde



(Photo: FoeNyx [25])

This molecule's proper name is *ethyl methylphenylglycidate*, and is used in the food industry as artificial stawberry flavour. Despite its common name of *strawberry aldehyde*, it's not an *aldehyde*, being classified as an *ester* and *epoxide*, and it doesn't come from strawberries, although it does taste of them.

Spamol

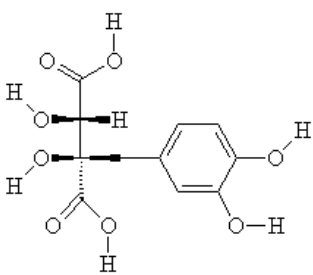


(Photo: PWM)

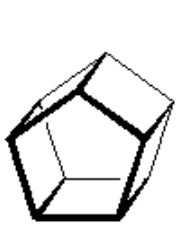
Could this be Monty Python's favourite molecule? *Spamol* might also conjure images of unwanted "Make Money Fast" emails circulating the globe ('spam–all'). Its other names are *aminopromazine*, *lispamol* or *lorusil*, and it's actually used as an anti-spasmodic therapeutic agent (or should that be anti-*spams*odic…?).

Fukiic Acid

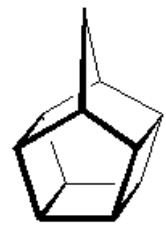
Fuki is the Japanese word for the butterbur flower, and *Fukiic acid* is the hydrolysis product from this plant, *Petasites japonicus*. Interestingly, further oxidation of this produces the wonderfully named *fukinolic acid*. (I wonder if *fukanolic* is anything like alcoholic...). Since the conjugate base of *fukinolic acid* is *fukinolate*, it's probably about time we stopped.



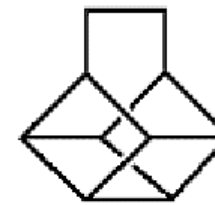
Housane, Churchane and Basketane



Housane



Churchane

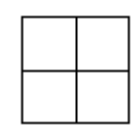


Basketane

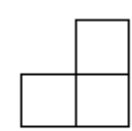
Obviously, these molecules get their name from their shapes[26]. Although I do think that *housane* (how sane?) should be closely linked to *psicose*, above.

Windowpane

On the same theme, *windowpane*, C_9H_{12}, gets its name from its resemblance to a set of windows[27], but unfortunately the bond strain is so great that it has never been synthesised. It's more accurately known as *fenestrane* from the Latin *fenestra* (= window)[5]. But the version with a corner carbon missing, C_8H_{12}, has been made, and goes by the name *broken window*[28]. Interestingly, a hypothetical derivative of *windowpane* has been suggested which includes a double bond, and this would of course be called *windowlene*... (This mustn't be confused with the real molecule, *vindolene*, $C_{25}H_{32}N_2O_6$ which is an alkaloid derived from periwinkles).

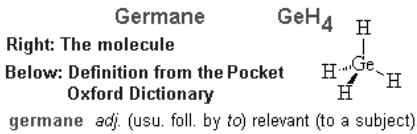


Windowpane



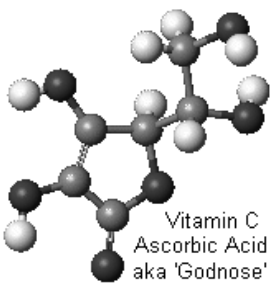
Broken Windowpane

Germane



This is a particularly *relevant* molecule that is *pertinent* and *has a bearing on* a number of inorganic reactions…

Godnose

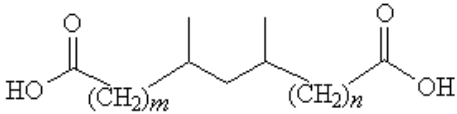


Ok, so this is a bit of a cheat, since it's not an official molecular name...but it makes a nice story [5]. When Albert Szent-Gyorgyi isolated *ascorbic acid* and published his findings, he called the new substance '*ignose*' from '*ignoscd*' meaning 'don't know' and '-ose' meaning a sugar.

When the journal editor refused to accept *ignose* as a sensible name, Szent-Gyorgyi suggested *godnose* instead! Alas, the editor was neither imaginative nor humorous, and suggested that a more proper name had to be used [29]. The structure of the carbohydrate was elucidated and the sensible name given to it was *hexuronic acid* (hex = six). During the same period (1928–1931), Charles Glen King of Columbia University isolated *vitamin C* from lemon juice, and soon realised that *hexuronic acid* and *vitamin C* were identical.

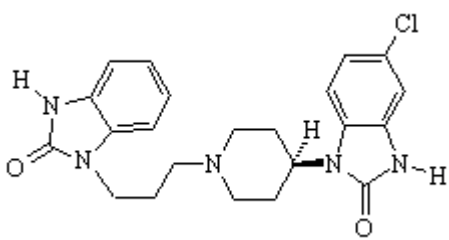
Incidentally, the name *ascorbic acid* derives from '*a-*' (against, or counteracting) and the Latin *scorbutus*, meaning the disease scurvy, since eating it prevents scurvy, as the old English sailors (the original 'Limeys') discovered. This word was itself derived from Old Norse (*skyr* = old curdled milk) and *bjugr* (edema) – referring to the ancient Viking belief that scurvy was caused by the sailors' diet of old curdled milk.

Diabolic Acid



Diabolic acids are actually a class of *dicarboxylic acids* with the general structure shown above, where the *m* and *n* chains can have different lengths and may contain double bonds. They were named after the Greek *diabollo*, meaning to mislead, since they were devilishly difficult to isolate using standard gas chromatography techniques [30].

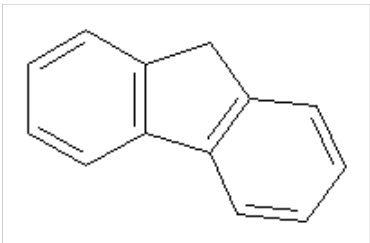
Domperidone



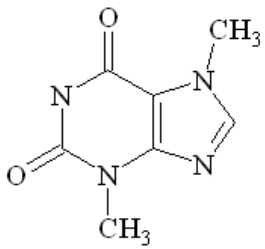
Left: Champagne bottles[31]

This molecule sounds like it should be the active ingredient in *Dom Perignon* champagne, but it's actually an anti-emetic drug. It is also used to promote the production of breast milk in lactating (or non lactating women), and even to induce lactation in a male!

Fluorene and Theobromine



Fluorene

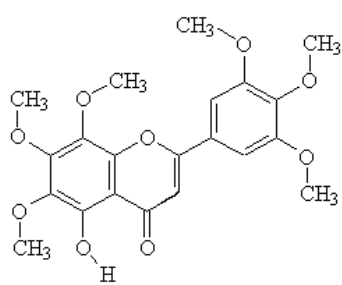


Theobromine

Fluorene is an unusual name in that the molecule doesn't contain the element fluorine! It gets its name from the fact it fluoresces under UV light. Similarly, *theobromine* doesn't contain any bromine. It's derived from cocoa trees (*Theobroma*), and is the bitter taste in dark chocolate. *Theos* actually means 'god' in Greek, and *broma* means 'food'. So, chocolate really is the food of the gods!

Gardenin

If you fancy a bit of gardenin', this is the molecule for you. In fact, there are many different *gardenins*, which are *flavones* extracted from *Gardenia lucida*, a plant from India [32]. The structure shown is for *gardenin A*, which forms yellow crystals.



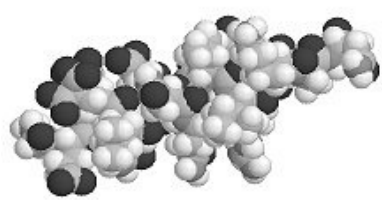
Uranate

The various *uranium oxide* anions (UO_2^{2-}, UO_3^{2-}, UO_4^{2-}, *etc*) go by the glorious name of *uranates*. I wonder if unwanted reactions of these ions are called 'involuntary uranation'...?

And is *nickel uranate* what you'd need to 'spend a penny'? Related to this, *uranium nitrate* is also known as *uranyl nitrate*, which sounds like the entry fee for a gents' toilet after 8pm.

Conantokin

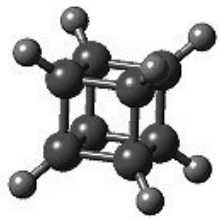
This chemical sounds like Conan the Barbarian has been smoking something he shouldn't... In fact it's a peptide neurotoxin found in the marine snail *Conus geographus*.

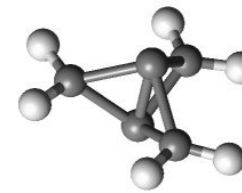


(Image created from 3D structure file [33]).

Researchers have found that some *conantokins* cause young mice to fall asleep, and older mice to become hyperactive, but they don't say what happens to middle-aged mice... It gets its name because it was isolated from *Conus* snails hence "con-". And, "*antok*" is a Filipino word which means "sleepy", which refers to its effect on young mice [34]. Apparently, there is also a related molecule called *contulakin*. "*Tulak*" is a Filipino term for "push". It seems that this molecule causes mice to be sluggish and thus, they had to be pushed.

Propellane and Cubane

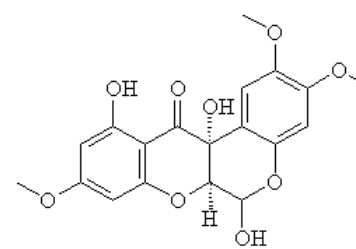




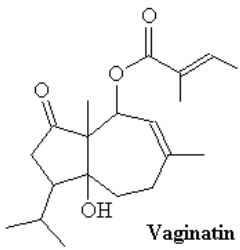
These two molecules are both named after their distinctive shapes. *Propellane* (left), C_5H_6, resembles a propeller [35], whereas *cubane* (right), C_8H_8, is a cube [36] (but doesn't come from Cuba). Other molecules that get their name from their geometric shapes are [5]: *dodecahedrane* $C_{20}H_{20}$, *prismane* C_6H_6, *spherands* and *hemispherands*, *squaric acid* $C_4H_2O_4$ and *deltic acid* $C_3H_2O_3$, *tetrahedranes* C_4H_4 and $C_{20}H_{36}$ and finally *twistane* $C_{10}H_{16}$.

Clitoriacetal

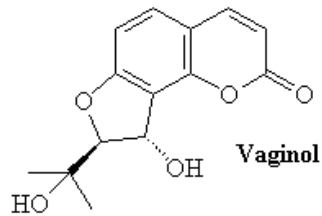
Apparently men find this molecule difficult to find… It gets its name from the root of the *Clitoria macrophylla* plant [37], and is a constituent of the Thai drug "Non-tai-yak" [38] which is used to treat respiratory disorders, including pulmonary tuberculosis and bronchitis, and also works as an insecticide.



Vaginatin



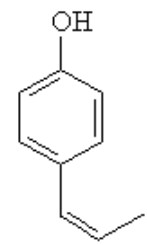
Vaginatin



Vaginol

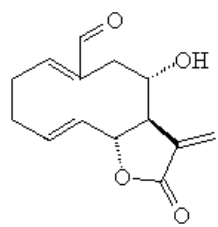
I know you can get most things nowadays in a tin, but this is getting silly! Actually it gets its name from the plant *Selinum Vaginatum*. A related molecule is *vaginol*, which also goes by the name *archangelicin.*

Anol



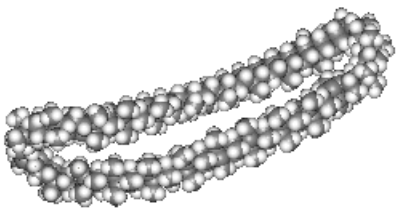
Anol is a synonym for 4-(1-*propenyl*)*phenol*, and it is apparently used in the flavour industry. Are compounds that bond strongly to this molecule called 'anolly retentive'?

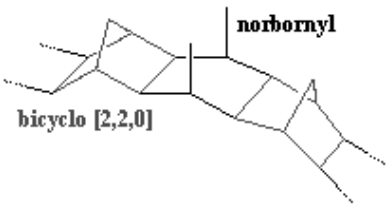
Urospermal



Is this an IVF clinic in Europe? In reality, it gets its name from being a constituent of the roots of the *Urospermum delachampii* plant.

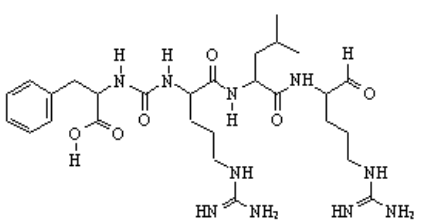
Dogcollarane





Dogcollaranes are a group of molecules made from alternating *bicyclo*[2,2,0] and *norbornyl* segments [39]. When there are 24 such components, the ends can be linked together to form a ring, which looks like a dog-collar. Unfortunately, although many of the intermediate structures have been made, none of the *dogcollaranes* have yet been synthesised. Shouldn't these molecules contain lead? (dog-lead, geddit?).

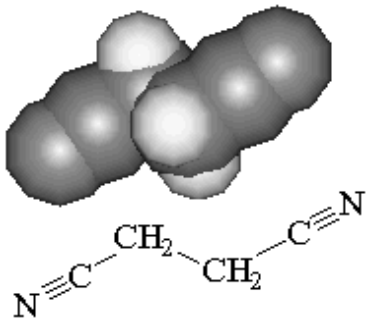
Antipain



Antipain is a protease inhibitor, which means it prevents proteins from being degraded. Despite its promising name, it is a very toxic compound, and it causes severe itch or pain (!) when contacted with the skin. Its name is actually a contraction of *anti-papain*, since it inhibits the action of *papain*, an enzyme found in papayas that's used to treat bee and jellyfish stings.

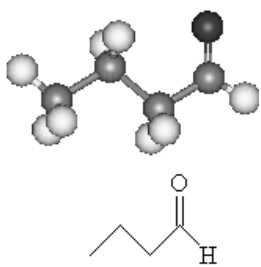
Dinile

Why did the two cyanide groups go to see a psychiatrist?
…Because they were both 'in *dinile*'.
In fact, *dinile* is another name for *butanedinitrile* or *succinonitrile*, and is a waxy solid that if ingested forms cyanides in the body.

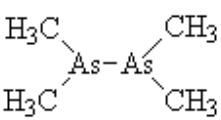


Butanal

This molecule sounds better if it's hyphenated (but-anal), but it is actually quite a common aldehyde, also known as *butyraldehyde*.

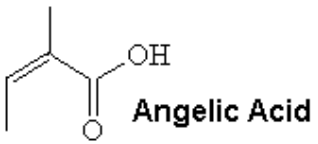


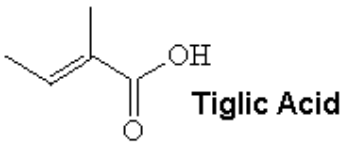
Cacodyl



This molecule gets its name from the Greek *kakodes*, meaning 'stinking', as it has a really pungent smell of manure with a delicate hint of garlic. It is sometimes spelled *kakodyl*, but its correct name is *tetramethyl diarsenic*. Its main claim to fame is that it was one of the compounds worked on by Bunsen (of burner fame).

Angelic Acid

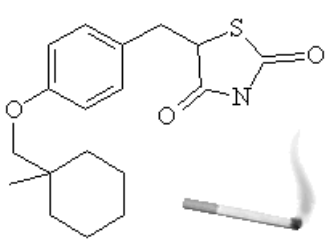




Angelic acid isn't very angelic at all - it's a defence substance for certain beetles. It gets its name from the Swedish plant Garden Angelica (*Archangelica officinalis*) from whose roots it was first obtained in the 1840s. Its proper name is *(Z)-2-methyl-2-butenoic acid*.

The other isomer (*E*) is also a beetle defence substance and goes by the equally silly name of *tiglic acid* (from the plant *Croton tiglium*, which gets its name from *tilos*, Greek for diarrhea!).

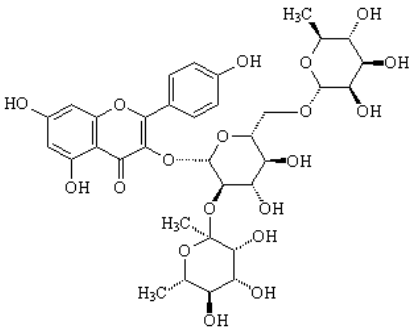
Ciglitizone



This molecule sounds like the places reserved for smokers to light up. Actually, *ciglitizone* is a member of a class of compounds that are used as anti-diabetics [40]. The drug *Avandia* (*rosiglitazone*), used to treat type II diabetes, is a member of this class of compounds.

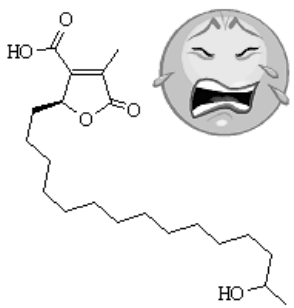
Another related molecule is *troglitazone*, which I've mentioned for fans of cave-dwelling dwarfs.

Clitorin



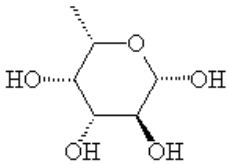
I don't know much about *clitorin*, except that it's a *flavenol glycoside*[41] (make of that what you will), but I'd like to bet that it's touch sensitive…

Constipatic Acid



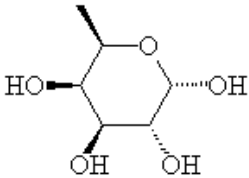
This is a constituent of some Australian lichens, including a fungus called *Parmelia constipata* which gave this molecule its wonderful name[42]. Derivatives of this molecule are *protoconstipatic acid*, *dehydroconstipatic acid* and *methyl constipatate.*

Fucol



L-Fucol

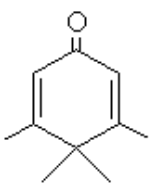
This sugar sounds like it doesn't do very much! Actually the *L-Fucol* form is obtained from the eggs of sea urchins, frog spawn and milk. The *L-fucol* form also goes by the name of *rhodeose* (yee-har!).

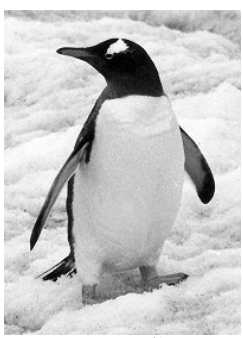


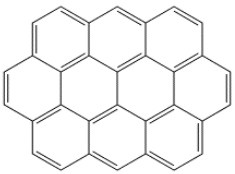
D-Fucol

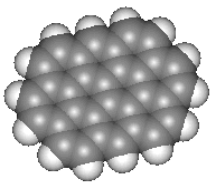
Penguinone

This molecule gets its nickname from the similarity of its 2D structure to a penguin. The effect is slightly lost in the 3D model, though. It's real name is: 3,4,4,5-*tetramethylcyclohexa*-2,5-*dienone.*




(Photo: Stan Shebs[43])

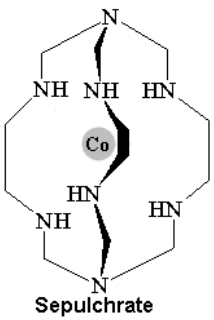




Ovalene

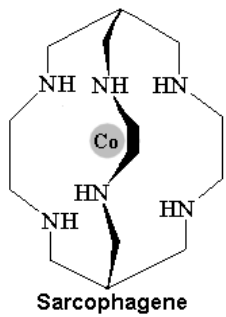
Ovalene is a polycyclic aromatic hydrocarbon [44], $C_{32}H_{14}$. Funnily enough it's oval-shaped... In the series of polycyclic aromatic hydrocarbons to which *ovalene* belongs, the next one is *circumanthracene*... (is it also known as *oy-vane*?).

Sepulchrate and Sarcophagene



Sepulchrate

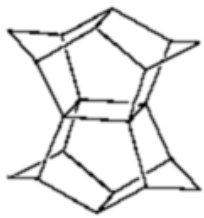
These spooky sounding molecules both have structures which wrap around and enclose metal atoms, such as cobalt, in a coffin-like cage. [45] Hence their funereal names.



Sarcophagene

Pagodane

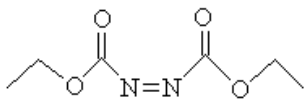
This $C_{20}H_{20}$ molecule gets its name because it resembles a Japanese pagoda [46] - well, two pagodas, back-to-back.



Left: The pagoda at the Kiyomizu-dera in Kyoto. (Photo: David Monniaux [47]).

DEAD and DEADCAT

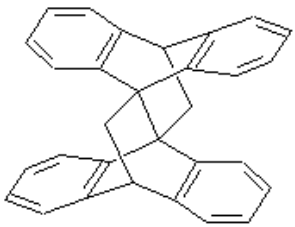
DEAD is actually the acronym for *diethyl azodicarboxylate*, which is an important reagent in the well-known Mitsunobu reaction which performs a stereospecific conversion of an alcohol to a primary amine.



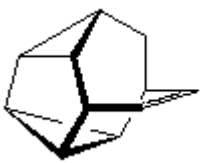
It's quite a good acronym, as *DEAD* is an orange liquid that's explosive, shock sensitive, light sensitive, toxic, a possible carcinogen or mutagen, and an eye, skin and respiratory irritant! A version of *diethyl azodicarboxylate* mixed with acid and *triphenylphosphine* has also been termed *DEADCAT*.

Lepidopterene and Biplanene

Lepidopterenes are a whole class of molecules named after their structural similarity to a butterfly. But when the two 'wings' are directly over one another, they look like a WW1 biplane, and so this group of molecules has been termed *biplanenes* [5].



Snoutene

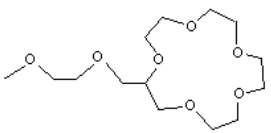


This strange looking molecule [48] resembles the nose or snout of an animal, but I don't know if it smells…

(Photo: David Monniaux [49]).

Crown Ethers, Lariat Ethers and BiBLEs

Both these ethers get their names from their distinctive shapes. *Crown ethers* look like crowns[50], whereas *lariat ethers* look like lassos [51], and are really just *crown ethers* with extended 'tails'.



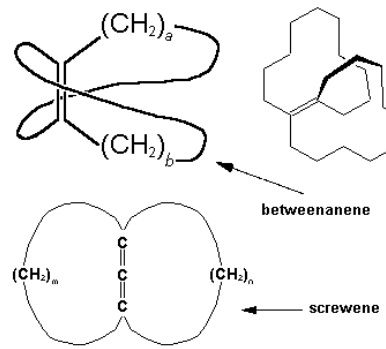
Some *lariat ethers* are so flexible that they can stick their tails into their rings (nice trick!), and so have been termed *ostrich complexes* [52], or *tail biters* [53]. *Lariat ethers* with two tails are called *bibrachial lariat ethers* (*bracchium* means 'arm'), and are abbreviated as *BiBLEs* [54].

Paddlane

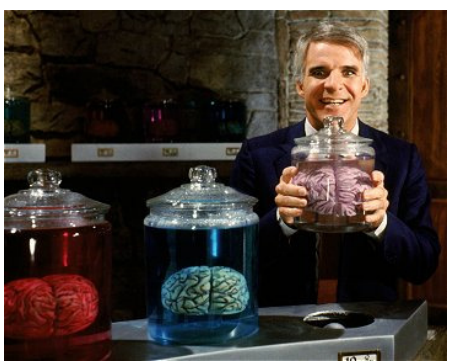
Paddlanes are molecules which have bicyclic *cyclohexane* units, which look a bit like the paddles on Mississippi steamboats [55].

Betweenanene (Screwene)

Betweenanenes are molecules which have a *trans* double bond shared between two *cycloalkanes*[56]. There is a whole family of them, depending upon the size of each ring. The one shown on the right is the [10,10] *betweenanene*. If there are two double-bonds linked together, the molecules are called *screwenes*[57], but this terminology isn't that popular, for obvious reasons!



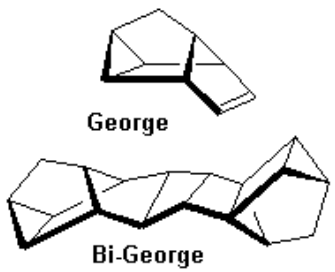
Furfuryl Furfurate



I bet Dr. Michael Hfuhruhurr could use some *furfuryl furfurate* about now...

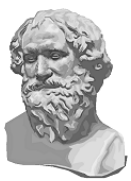
A ridiculously-named molecule, about which I know virtually nothing, although I'm told it's quite smelly and may be used as a vapour phase polymerisation inhibitor. It got its name from the Latin *furfur*, meaning "bran" (the source of the compound). A related molecule, *furfural alcohol* is apparently used in the fabrication process of the Reinforced Carbon-Carbon (RCC) sections used in the space shuttle.

George and Bi-George

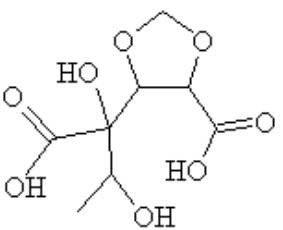


The story goes [5,58] that when undergraduate James Carnahan achieved the synthesis of a new cage structure at Columbia University, he asked his supervisor Prof Katz to suggest a name for it. Since trivial names are often arbitrary, he suggested *George*. When *George* was heated with a Rh catalyst, it dimerised to produce *Bi-George*.

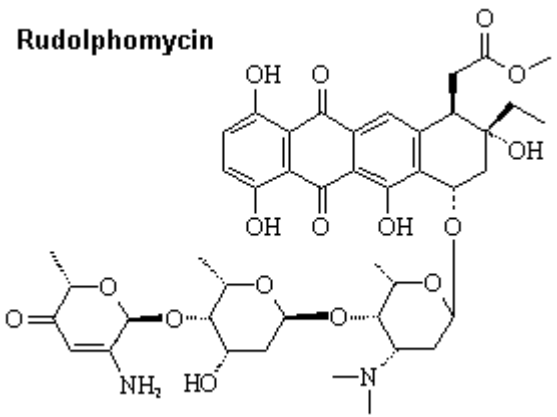
Eurekamic Acid



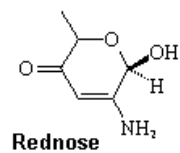
Eureka! was supposedly the exclamation used by Archimedes when he found something interesting in his bath water. It means 'I have found it', and so when researchers at May & Baker discovered this acid, they felt it was such a 'Eureka moment' that they named the molecule after it [59].



Rudolphomycin and Rednose

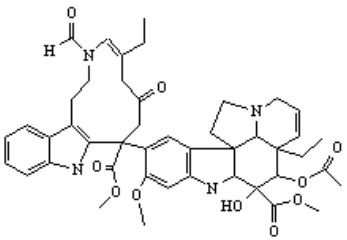


Rudolphomycin is an antitumor and antibiotic compound. It was named following a series of such molecules derived from *bohemic acid complex* - which was given its name because the discoverer, Donald Nettleton [60], was an avid opera fan, and called it after the Puccini opera *La Bohème*.



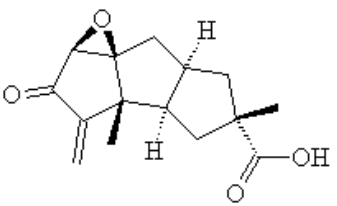
Derivatives of this molecule were then given names from characters in the opera, such as *mussettamycin* and *marcellomycin*, after Musetta and Marcello, *mimimycin* (after Mimi), *collinemycin* (Colline), *alcindoromycin* (Alcindoro), *schaunardimycin* (Schaunard), and finally *rudolphomycin* after the character Rudolph [61]. On degradation of *rudolphomycin*, a new sugar was obtained, which was christened *rednose* [62]. This rather silly name was probably allowed to stand since the paper was submitted to the journal very close to Christmas in 1978, and the journal editor probably had the Yuletide spirit! [5]

Catherine



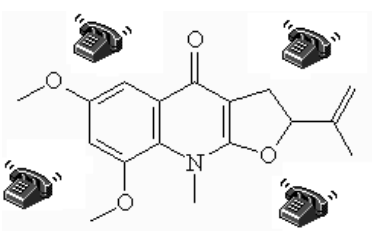
Or *Cathy* to its friends? I don't know much about this molecule except that its name comes from the plant *Catharanthus roseus* [63]. I'm surprised, though, that it's not wheel shaped.

Complicatic Acid



This molecule didn't get its name because it was complicated to make, but rather from the plant *Stereum complicatum* from which it was isolated [64].

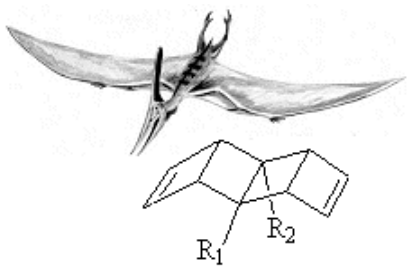
Ptelefolone



This molecule rings a bell! It's an alkaloid [65] that gets its name from the hop tree *Ptelea trifoliata* from which it was first isolated.

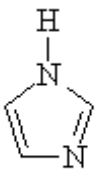
Pterodactyladiene

This is a group of molecules that resemble the ancient flying reptiles [66]. The R groups can be altered to give different sized 'heads' or 'tails'.



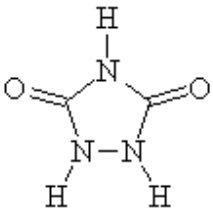
Pteranodon[67] and *pterodactyladiene*.

Miazole and Urazole



Miazole

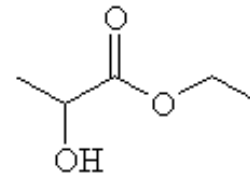
If you pronounce the 'a' as in 'cat', and the 'z' as an 's', then you get the classic chemistry joke: What's the difference between *miazole* and *urazole*? The size of the ring...



Urazole

And shouldn't there be a '*herazole*', a '*theirazole*' and an '*ourazole*' to get a complete bunch of *azoles*? Actually, the proper name for *miazole* is *imidazol*, but that spoils the joke a bit.

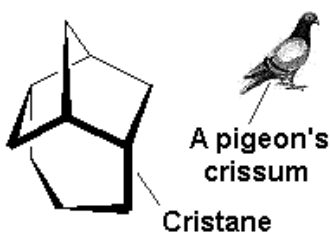
Ethyl Lactate



This is another standard undergraduate chemistry joke, based around the fact that *ethyl* sounds like a common female name. "How do you make *Ethyl lactate*...?" (I'll leave you to make up your own answer…but you could try *domperidone*, see above).

Other names involving *Ethyl,* such as *Ethyl palpitate*, *Ethyl fornicate* and the spinster *Ethyl celibate* also make good jokes, but unfortunately the corresponding acids (*palpitic*, *fornic* and *celibatic*) don't exist. Similarly, is *copper tartrate* what policewomen get paid to impersonate prostitutes?

Cristane

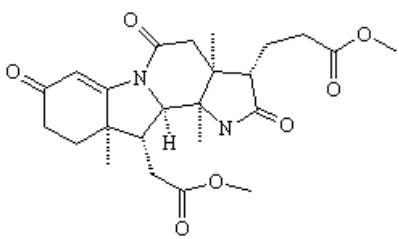


So what's so amusing about *cristane*? Well, for the non-biologists amongst you, a *crissum* is the name given to the area near the anus of a bird! *Tricyclo*[5.3.0.0]*decane* was given the nickname *cristane* [68] since on the evening it was first discovered, a window in the lab was left open. A pigeon got into the lab overnight and did what pigeons do - all over the lab and equipment. The clean-up crew named the new molecule in honour of the part of the bird's anatomy that had created the mess [5].

Birdcage

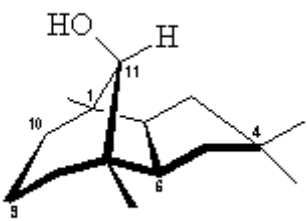
This molecule is so called because it, um, resembles a birdcage [69]. Maybe it should have been used to capture the aberrant pigeon from *cristane*, above…

Cornerstone

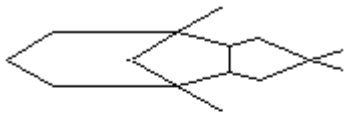


Ok, this is a bit of a cheat, since its real name is β-*corrnorsterone*, but it's known as *cornerstone* by all those that work with it. It got its name since it's a *ketone* with a *norsteroid* structure (hence *norsterone*) and its discoverer, Robert Woodward, thought it might eventually be possible to transform it into a *corrinoid*.

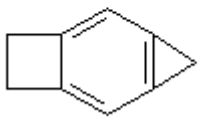
Apolloane and Rocketene



Apolloane-11-ol



Apolloane



Rocketene

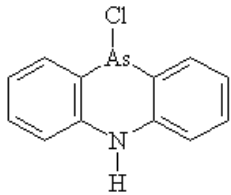
Apollo 11 launches

Apolloane was created at the same time as the Apollo 11 moon landings. When drawn as a flat diagram the structure bears a striking similarity to a rocket, with side fins and exhaust. And if an OH is added to carbon 11, we get *apolloane*-11-*ol*. Apparently, Neil Armstrong's personal memorabilia include a reprint of the chemistry publication which named it [5,70].

On a similar theme, *rocketene* was also named for its structural resemblance to a rocket.

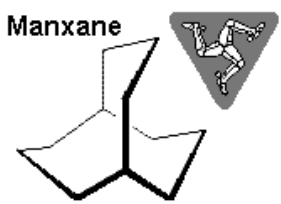
Adamsite

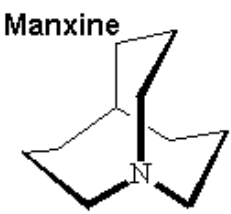
This molecule was named after the renowned chemist Roger Adams of the University of Illinois [71]. It's actually a chemical warfare agent, and is 'a damn sight' better at killing people than most other molecules.



Manxane and Manxine

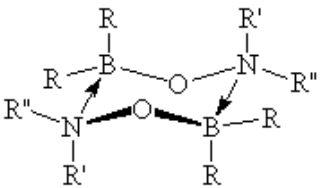
Manxane resembles the coat of arms of the Isle of Man (called a *triskelion*) which consists of 3 armoured legs in a circle. *Bicyclo*[3.3.3]*undecane* was named *manxane* since it closely resembles this Manx emblem [5,72].





Later on, a group of researchers at the University of Illinois created an *amine* analog of *manxane* with a bridgehead nitrogen, and so called it *manxine* [73]. Professor Leonard, who created this molecule, thought *manxine* sounded like a girl's name - so we now have the male (*manxane*) and female (*manxine*) versions of the molecule, with the difference being what is situated between their legs!

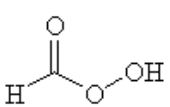
BON-BONs



These ring structures are not what makes French sweets taste, well, sweet. Heterocyclic dimers like the one shown in the picture (where you vary the R, R' and R" groups) are named from the fact that the ring atoms in sequence spell out BON-BON [74].

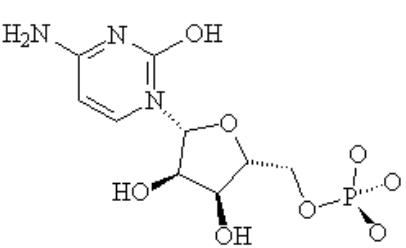
Performic Acid

An actor's favourite chemical? As you might expect from a *per-acid*, it's a very strong oxidising agent, and always puts on a per-fect per-formance!

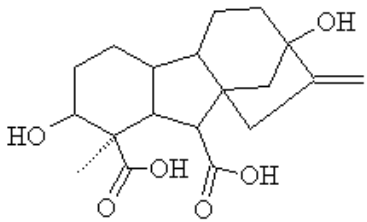


R-CMP

As anyone from Canada will know, R.C.M.P. are the initials for the Royal Canadian Mounted Police, but this molecule isn't their emblem. *R-CMP* is actually short for *R-cytidine monophosphate*, and is actually a component of RNA.



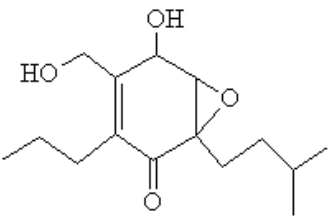
Gibberelic Acid



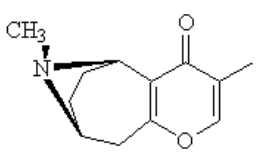
Gibberelic acid isn't a psychotropic drug that makes you gibber insanely like a monkey...it's actually one of a number of *gibberelins*, which are plant hormones which control various aspects of plant growth.

Jesterone

This playful and mischievous molecule is found in a fungus, *Pestalotiopsis jesteri*, which lives inside yew trees [75].



Bellendine



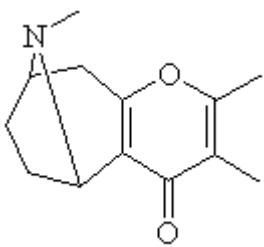
For non-UK readers, I won't tell you what 'bell-end' is slang for in the UK, but a clue might be that this molecule is extracted from the flower *Bellenda Montana* [76], which should have a purple head.

Sodamide

This is the shorthand name given to the common chemical, *sodium amide*, $NaNH_2$. It sounds like it belongs in close proximity to other molecules in this list, such as *arsole*, *anol*, *skatole*, and maybe *fruticolone*... But I'm not letting it get anywhere near *miazole*!

Darlingine

This molecule is lovingly extracted from the Brown Silky Oak tree, *Darlingia darlingiana*[77]. It hasn't been analyzed biologically yet, but may have activities similar to other *tropane alkaloids*, such as muscle contraction and stimulation... (But it only works if you treat it nicely).



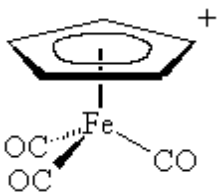
Germylene

(Photo: Ng Paik Mui).

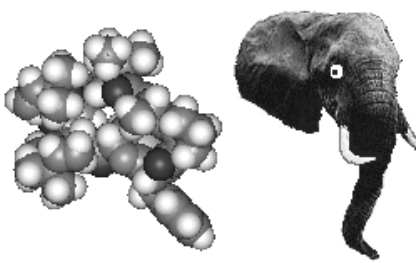
The GeH_2 radical is called *germylene*, which is similar to a UK antiseptic ointment called *Germolene*. I doubt that *Germolene* contains *germylene*, though, as GeH_2 is very toxic.

Piano Stool

These are a group of molecules made from a transition metal bonded to a *cyclopentadienyl* ligand, so that they resemble a 3-legged piano stool [78]. I don't know if molecules have been made with other numbers of 'legs', such as milking stools, *etc.*

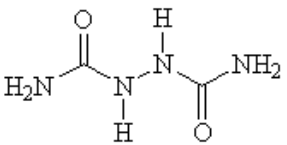


Trunkamide



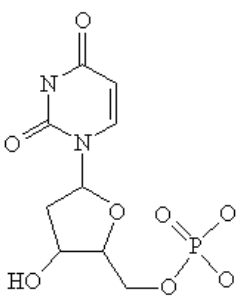
Trunkamide has nothing to do with elephants, although its spacefill structure does look a bit like an elephant. It was isolated from a sea squirt living in Little Trunk Reef (part of the Great Barrier Reef off Australia) [79], and is reported to have anti-tumor properties.

Diurea



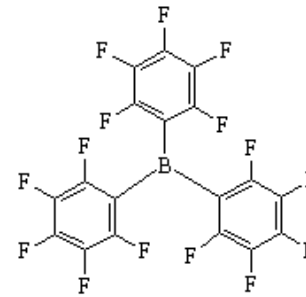
As you might expect, this molecule and its derivatives are often used as a fertiliser, being splattered liberally around fields of crops. It's also known as *biurea*, but its proper chemical name is *N,N'-dicarbamoylhydrazine*.
It's also sometimes used as flow improver in paints and greases. So next time you paint your house you can tell people you're covering it with *diurea*.

dUMP and RUMP



Maybe *dUMP* is the molecule into which all the waste atoms are thrown? In fact it's the acronym for 2'-*deoxyuridine*-5'-*monophosphate*, and is an RNA transcription subunit - or a part of the molecule that makes proteins, and is one of the building blocks of DNA. Maybe *dUMP* makes so-called junk-DNA? *dUMP* is a deoxygenated form of *RUMP*, which is another of the bases found in (near the bottom of?) RNA.

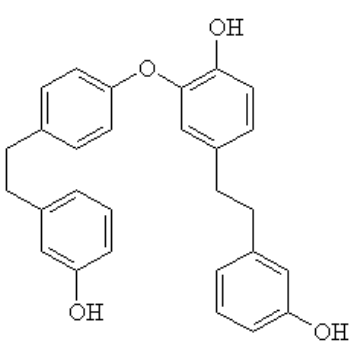
BARF



There are two molecules that are called by their shorthand name of *BARF*. The first, often written as BAr^F, is a halide abstracting reagent $B[3,5\text{-}(CF_3)_2C_6H_3]_4^-$, *i.e.* two CF_3 groups on each *phenyl*, and four of those *phenyls* on a boron.

The second is written *BARF*, and is the shorthand for *tripentafluorophenylborane* (B-Ar-F), see structure on the right. It is mainly used as a strong Lewis acid to abstract a *methyl* group in the reaction to make a highly active *ethylene* polymerization catalyst. So you really can barf into a plastic bag!

Small-breasted dog

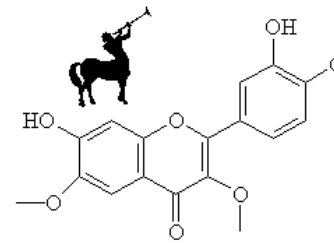


Yes, it really is called that, but in Spanish! The molecule is actually named *perrottetin-a* which (almost) literally means "small-breasted-dog" (*perro* = dog, *tetita* = small breast).

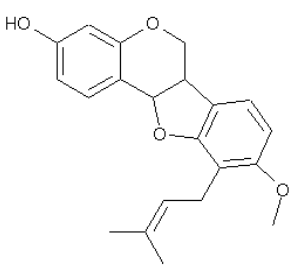
The molecule gets its name from the liverwort plant from which it is extracted [80], *Hepatica Radula perrottetii*, but I don't know why this plant is named after a small breasted dog.

Centaureidin

Centaurs are mythical creatures which are half horse, half human. The molecule *centaureidin* got its name, not because its inventors were horsing around, but because it was extracted from a cornflower called *Centaurea corcubionensis*. It was discovered along with a molecule named *centaurein*, found in the same plant [81].



Sandwicensin



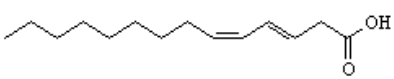
John Montagu, The Fourth Earl of Sandwich, was a notorious gambler who would often go from pub to pub in London on gambling marathons. To satisfy his hunger while continuing to gamble, he would order slices of meat between two pieces of bread - thus, was the sandwich born. But how about *sandwicensin*? It's a cytotoxin, isolated from a soggy old sponge, so I guess that it must be somewhat less than appetizing [82].

Magic Acid

'Magic Acid' is the nickname given to one of the strongest of the inorganic 'superacids'.

It is made by mixing together *antimony pentafluoride* (SbF_5) and *fluorosulfonic acid* (HSO_3F), and it is so strong (pK_a = -20) that it is capable of protonating even saturated alkanes, like *methane*, to produce *carbonium ions*. On a similar theme, *magic methyl* is the name given to *methyl fluorosulfonate* ($F\text{-}SO_2\text{-}OCH_3$) due to its extreme methylating power [83].

Megatomic Acid



This molecule has nothing to do with nuclear explosions, and neither is it the magic formula that creates a superhero. But it is in fact named after the black carpet beetle *Attagenus megatoma* (*Fabricius*), in which it is the principle component of the beetle's sex attractant [84]. Its proper name is (3*E*,5*Z*)-3,5-*tetradecadienoic acid.*

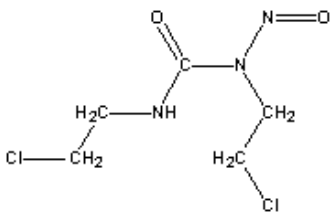
Left: Looks like someone's just synthesised *megatomic acid*...!
(Copyright Getty Images, used with permission, Photo: Chad Baker).

Grasshopper ketone

I'm guessing that this molecule got its name as a result of laziness. It's extracted from the defensive secretions of the flightless grasshopper *Romalea microptera*.

I assume that after spending hours in the field, annoying the grasshoppers, and then catching them and 'milking them', the scientists involved were too tired to think of a proper IUPAC name, so they came up with an inspired name - *grasshopper ketone* [85].

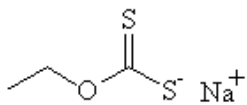
BCNU



1,3-*bis*(2-*chloroethyl*)-1-*nitroso-urea* (also known as *carmustine*) has got quite an appropriate acronym, *BCNU* (be seein' you...), since in early medical studies it was found to be so toxic, it killed the patient! This isn't surprising, as it's related to *mustard gas*.

It is highly carcinogenic, causing tumors in rats, mice, rabbits, and probably humans as well. Ironically, it is actually used as a treatment for brain cancer and other diseases, such as Hodgkin's lymphoma [86].

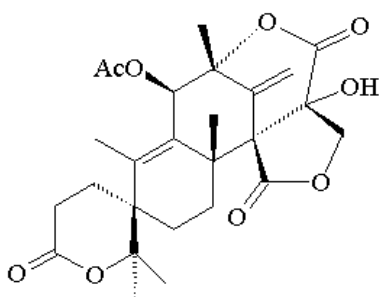
SEX



SEX is the official abbreviation of *sodium ethyl xanthate*, which is a flotation agent used in the mining industry. Apparently you can get *SEX* in both solid and liquid forms (should that be hard *SEX* and wet *SEX*?).
According to Australia's National Industrial Chemicals Notification and Assessment Scheme [87] signs of high exposure to *SEX* include "dizziness, tremors, difficulty breathing, blurred vision, headaches, vomiting and death". Sound familiar...?
On a related note, there's another flotation reagent, *KAX*, *potassium amyl xanthate*, which has the same function, and the same smell.

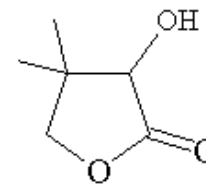
Austin

Mike Myers as Austin Powers, in the film 'The Spy who Shagged me'. (Copyright Getty Images, used with permission).



Austin has nothing to do with Austin cars, Austin Texas, or even Austin Powers...it's actually a mycotoxin, which comes from the fungus *Aspergillus ustus* which grows on black-eyed peas [88]. The name is a contraction of *A. ust* plus '*–in*'.

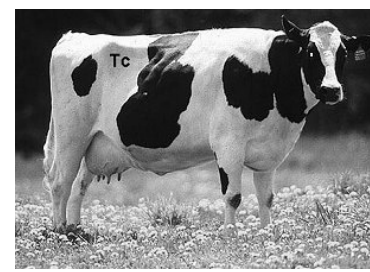
Pantolactone



This molecule sounds like it belongs in underwear, or on stage in a pantomime. As you might expect, it is used as a reagent in the synthesis of *CAMP* ligands (*cis*-2-(*aminomethyl*)-1-*carboxycyclopropane*), and is found in cocoa [89].

Technetium Cow

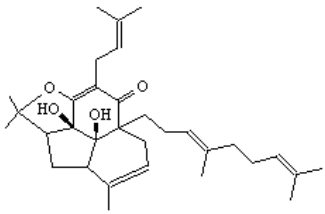
'Cow' terminology comes from the nuclear industry, and it has nothing to do with the cattle that live near nuclear power plants. A radionuclide, such as ^{99}Mo (as its ammonium salt), is stored in a column, called a 'cow'.



A cow, but not a technetium one [90]

Its decay product, technetium-99m, is continually produced, and it can be flushed out of the cow column in a process called 'milking the cow'. The *technetium cow* isotope is then used in bone scans, and has a 6-hour half-life. On a related theme, *molybdic anhydride* (MoO_3) is often referred to as 'Moo'.

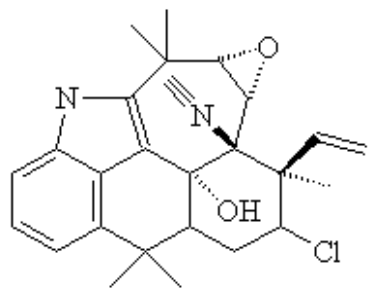
Erectone



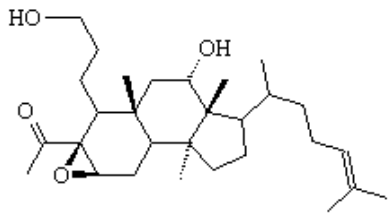
No, this isn't one of the ingredients in *Viagra*...but is actually one of a group of compounds extracted from the Japanese/Chinese herb *Hypericum erectum*, which is often used in traditional Chinese medicine to treat arthritis, rheumatism, and as an astringent [91].

Abiguene

Ambiguenes are cytotoxic fungicidal *indole alkaloids* that are extracted from blue-green algae (*Ficherellu Ambigua*) [92]. As many as 7 are known. Although it could just be 5. Or 10. Or maybe they are a different type of molecule altogether…?



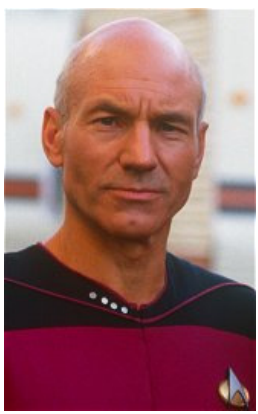
Lovenone



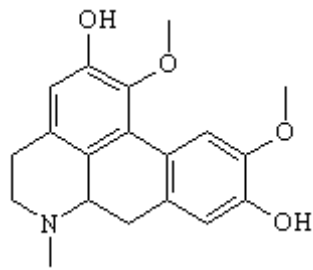
This lonely sounding molecule (*love-none*) is a cytotoxic agent isolated from the skin of a *dorid nudibranch* (of course) called *Adalaria loveni* which lives in the North Sea.

Dorid nudibranchs are shell-less marine molluscs that you'd expect to be extremely vulnerable to predation…but aren't since they have evolved nasty chemicals such as *lovenone* as a defence [93]. In this case, love really can kill…

Boldine



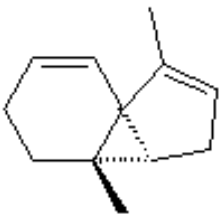
Too much *boldine* on the Starship Enterprise's menu? (Patrick Stewart as Jean-Luc Picard in Star Trek:TNG, Copyright Getty Images, used with permission, photographer: George Rose).



This is an alkaloid extracted from the Chilean *Boldo* shrub (*Peumus boldus*) [94]. It is a good antioxidant and can protect the liver, although no-one's mentioned hair-loss as a side-effect?

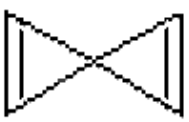
Inflatene

This molecule is isolated from soft coral (*Clavularia inflata*) and is apparently toxic to fish [95] - maybe it blows them up! Geddit?



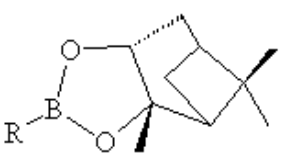
Bowtiediene

The molecule for formal occasions? This is another molecule named after its shape - although the preferred name is *spiropentadiene* [96].

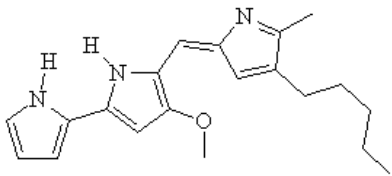


(R)-DICHED

This is the abbreviation for *(R,R)*-1,2-*dicyclohexyl*-1,2-*ethanediol* [97]. I wonder who the real *DIC-HED* is?



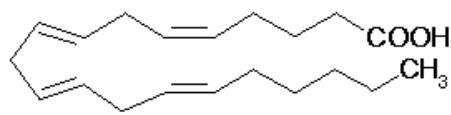
Prodigiozan



This molecule has a name that sounds like the Biblical 'prodigal son', who finally returned home. The structure shown is actually that of the related molecule, *prodigiosin*, since I can't find the structure of *prodigiozan*... well, not until it finally comes back here. Both molecules are antibiotic pigments produced by *Chromobacterium prodigiosum*, with antimicrobial and cytotoxic properties.

Arachidonic Acid

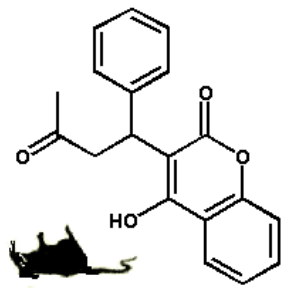
An avid user of *arachadonic acid*?
(Copyright Getty Images, used with permission, Photo: Mark Von Holden/WireImage).



This molecule sounds like it has something to do with spiders, but it's actually made in the human body [98]. It is synthesised from *linoleic acid* and plays an important stage in the inflammatory process of the human body - some non-steroidal anti-inflammatory drugs are believed to work by inhibiting this stage.

Nobody has managed yet to artificially produce medical grade *arachadonic acid* (it's mainly used in infants) so the only source is rats' urine - it needs a day's worth of urine from 10,000 rats to produce a single dose! Now, that really is taking the p***!

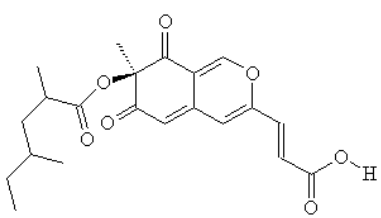
Warfarin



This molecule sounds like it could be a warfare agent, and it is...if you're a rat [99]. It's a rat poison which stops the blood clotting, so the rats bleed to death from the slightest injury. It also has medical uses in blood thinning and clot prevention. It gets its name since *WARFarin* was the first patentable product of the Wisconsin Alumni Research Foundation (WARF).

An interesting story about *warfarin* is that it may have been used to kill Stalin [100]. One medical side-effect of *warfarin* treatment is the dreaded 'purple toe syndrome', where small deposits of *cholesterol* break loose and flow into the blood vessels in the skin of the feet, which causes a blue-purple colour mainly in the big toe and may be painful.

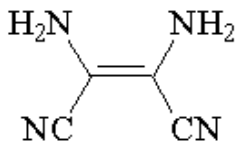
Lunatoic Acid



Lunatoic acid gets its name since it's isolated from the fungus *Cochliobolus lunatus* [101]. It is a good antibiotic and also causes fungi to shed their spores in a mad frenzy. Perhaps it kills bacteria by causing them to die by insanity, in the same way canine distemper kills animals.

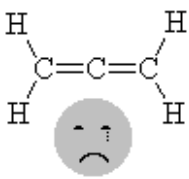
DAMN

DAMN is the acronym for *diaminomaleonitrile*, which is a particularly nasty molecule containing two *cyanide* groups [102].



"Frankly my dear, I couldn't give a *diaminomaleonitrile*..."
(Clark Gable in 'Gone with the Wind', Copyright Getty Images, used with permission, photo: Clarence Sinclair Bull).

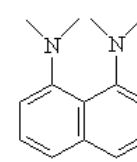
Allene



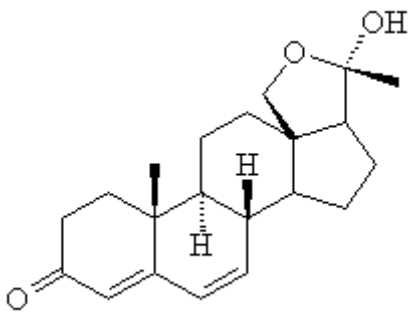
Allene is quite a sad molecule in Holland, since in Dutch it is called *alleen*, which simply means 'alone'. And if you add a *benzene* ring you'll get *benzo-allene* which means "I'm so lonely" in Dutch. Ahhhh….

Proton Sponge

According to the Aldrich Chemical Catalog, 1,8-*bis*(*dimethylamino*)*naphthalene* is a very strong base with weak nucleophilic character due to steric effects. Therefore it goes by the nickname *proton sponge*, since it mops up all available protons.



Mirasorvone

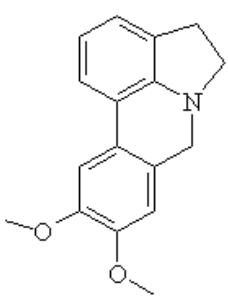


Left: Mira Sorvino, the actress.

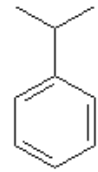
This molecule forms part of the defensive chemistry of the recently named 'sunburst diving beetle' (*Thermonectus marmoratus*). The discoverers at Cornell University [103] named it in honour of the actress Mira Sorvino, who, as Dr Susan Tyler in the motion picture *Mimic*, successfully confronted the ultimate insect challenge.

Assoanine

This molecule gets its superb asinine name from the plant from which it is extracted, the gloriously named *Narcissus assoanus*!

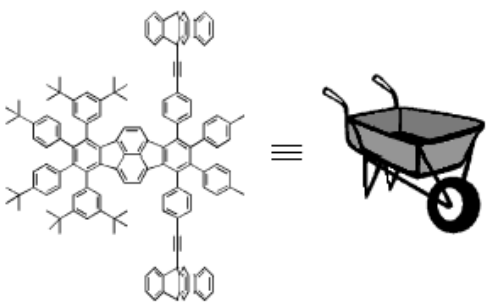


Cumene



Luckily, this molecule is actually pronounced 'coo-mene', so as to avoid sticky problems when ordering it. It's a fairly standard organic solvent, with a distinctive odour, that is used to make resins, polycarbonate, synthetic fibres such as nylon, and other plastics. Although pronounced the same, it has nothing to do with the Indian curry spice, cumin.

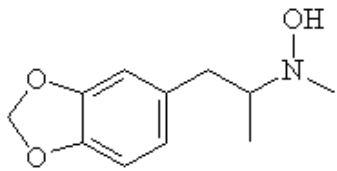
Wheelbarrow Molecule



(Reproduced with permission from Elsevier, from ref.[104]).

Here's a molecule that has been designed to look like a wheelbarrow – well, why not? It doesn't seem to have a full name yet, so for now it's just called *wheelbarrow molecule*. What's next, a molecular lawn mower? Pruning shears?

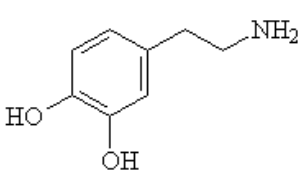
Flea



Right a SEM picture of a real flea [105].

This is the commonly used name for the amphetamine, *N-hydroxy-N-methyl*-3,4-*methylenedioxymethamphetamine* (the *N-hydroxylated* version of *MDMA* or *Ecstasy*). The origin of its name is a bit strange [106], and is related to the fact that a commonly-used code name for the parent compound, *MDMA* was *ADAM*. The 6-*Methyl* homologue was then called *MADAM*, and, following this pattern, the 6-*Fluoro* analogue was to be *FLADAM*. So, with the *N-hydroxy* analogue, the obvious choice was *HADAM*. But this brought to mind the classic description of Adam's earliest complaint, an infestation of fleas. The poem was short and direct: "Adam had 'em." So, in place of *HAD 'EM*, the term *FLEA* jumped into being.

Dopamine

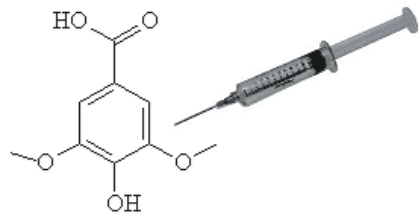


Dopamine (pronounced dope-a-mean) is a neurotransmitter in the brain. It is connected to pleasurable sensations (feeling doped) and has been shown to be connected to drug abuse and addiction.

Maybe that's why Dopey from Snow White and the Seven Dwarves always had that silly grin on his face…

Syringic Acid

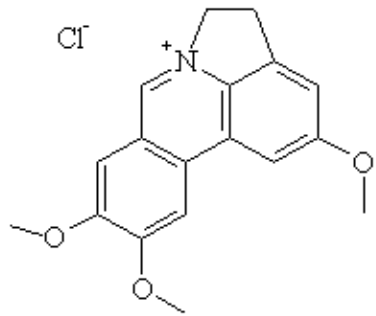
This molecule is named after the lilac plant, since the Latin name of lilac genus is *Syringa*. Lilac bushes possess hollow sticks which were used in ancient times to make flutes.



In fact, there is a kind of flute that is called *siringa* in Spanish. In Latin the meaning of the word *siringa* was extended to include hollow tubes made of any material, including metal. Later, when hollow needles began to be used to inject liquids in the body, quite naturally they were called syringes. Funnily enough, *syringic acid* can be found in blueberry plants, which, in Latin, are called *Vaccinium*. Quite a coincidence! On a related theme, there is also a *vaccenic acid* (*Z-11-octadecenoic acid*, also known as *asclepic acid*) although its structure is not related to that of *syringic acid*. Another interesting fact is that *syringic acid* is a component of red wine, and traces of this molecule found in Egyptian jars from King Tut's tomb show that the ancient Egyptians used to drink red wine [107]. Funnily enough, since 5 other wine jars did not contain *syringic acid*, this shows that they enjoyed white wine as well.

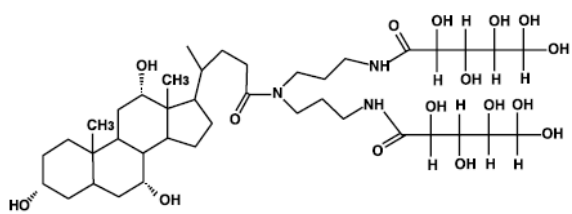
Tortuosine

Tortuosine – Viagra for tortoises?
(Copyright Getty Images, used with permission. Photographer: Mark Moffett)



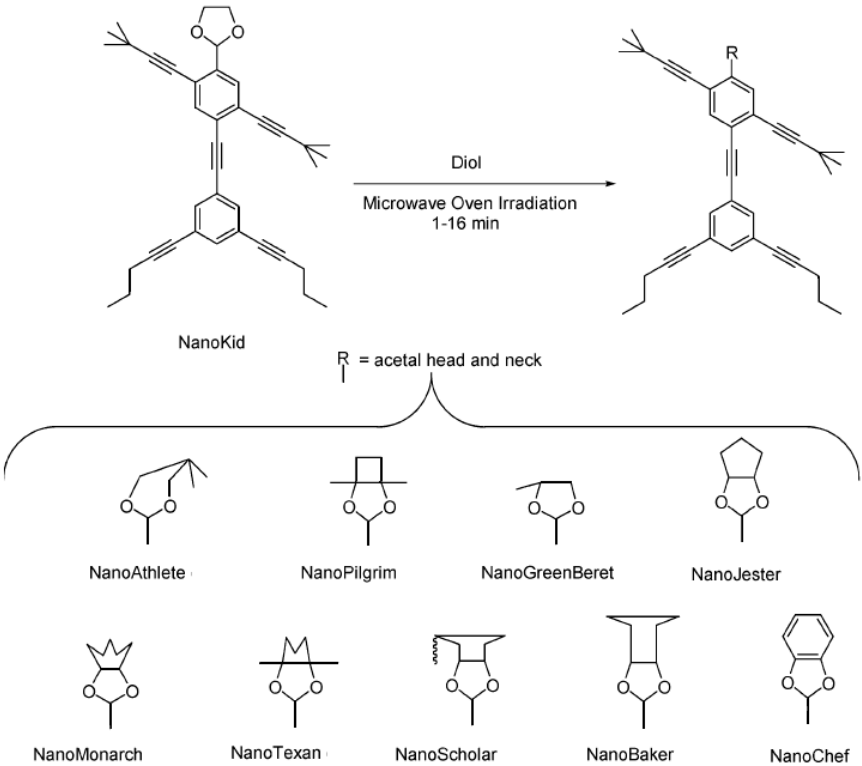
This molecule is an alkaloid extracted from the plant *Narcissus tortuosus*, but I bet it was extracted very slooooowwwllly. In fact, this naturally occurring organic compound, as well as *assoanine* (see above) had plant-derived names that were so compelling that Lee Flippin designed and executed total syntheses of them just for the fun of it! [108]

BIG CHAP

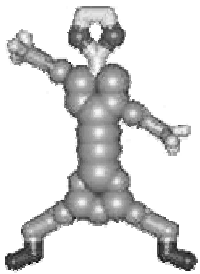


This wonderfully named molecule has nothing to do with reproduction, but is actually a detergent which has the official name of *N,N-bis*(3-*D-gluconamidopropyl*)*cholamide* [109]. Apparently the molecule has reduced electrostatic interactions that prevent your *BIG CHAP* getting stuck in a chromatography column.

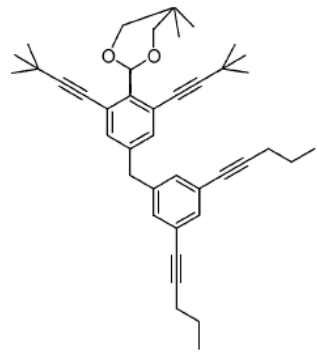
NanoPutian Molecules



And today's award for the 'How did they possibly get a grant to do *that*?' paper, goes to two chemists from Rice University in Texas. Their paper [110] concerns making anthropomorphic molecules - *i.e.* molecules that look like humans...but why anyone would want to do this I don't know... The molecules have been named *NanoPutians*, after the little men from Lilliput in the book "*Gulliver's Travels*". They come in many forms - the basic building block is the *NanoKid*, and from this other variants can be made, such as *NanoAthlete* and *NanoBaker* and even *NanoBalletDancer* (see below).



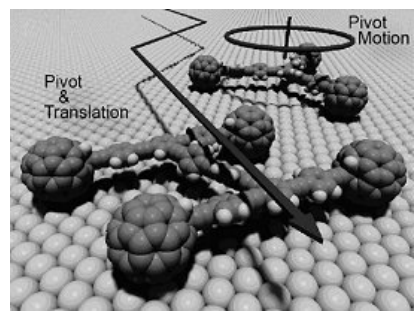
Page Above: the *NanoPutian* family.
Above: *NanoKid* as a spacefill structure.
(Figures reprinted in part with permission from ref.[110]. Copyright 2003 American Chemical Society)



NanoBalletDancer.

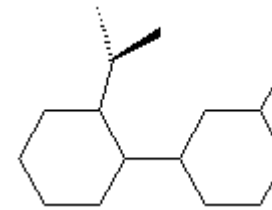
Nanocars and Nanotrikes

These are the perfect vehicles for driving *Nanoputians* around their nanoworld. They are made from a rigid framework of benzenes and acetylene groups, with either three or four C_{60} molecules attached at the ends as 'wheels'. I always wanted a compact....



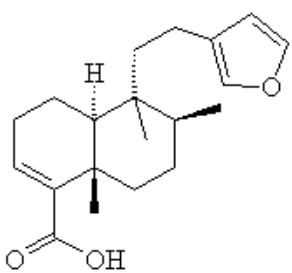
Nano-vroom, nano-vroom!
(Figure reprinted in part with permission from ref.[111]. Copyright 2005 American Chemical Society)

Bicyclohexyl



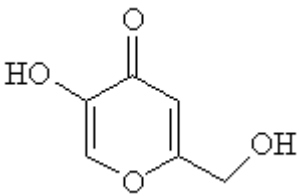
This molecule not only has a name that sounds like a bicycle, it even looks a bit like one too! In fact, the *bicyclohexyl* compound with *isopropyl* and *methyl* sidechains (2-*isopropyl*-3'-*methylbicyclohexyl*, shown in the diagram) looks even more like a bicycle. There is also *tricyclene*, but unfortunately its structure looks nothing like a tricycle.

Hardwickiic acid



This is a *diterpene* which got its name since it was first isolated from the Indian tree *Hardwickia pinnata* [112]. I assume the tree was named after Thomas Hardwicke the English naturalist who lived in India around 1800 [113].

Kojic Acid

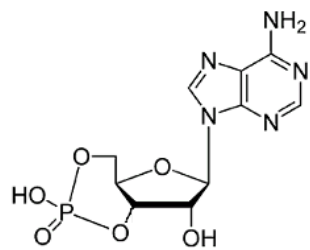


Who loves ya, baby? Tele Savalas as lollipop-loving cop Theo Kojak.
(Copyright Getty Images, used with permission).

This sounds like Tele Savalas' favourite molecule. In case you didn't know, he was the star of the US TV cop show from the 1970s called 'Kojak'. Its official name is 5-*hydroxy*-2-*(hydroxymethyl)*-4-*pyrone*) and it is produced by several types of fungi, including *Aspergillus oryzae*, which is called *koji* in Japanese [114]. *Kojic acid* is a by-product in the fermentation process of malting rice, for use in the manufacturing of sake. It is used as a skin whitener... but does it work especially well on bald heads?

cAMP

This effeminate sounding molecule is actually short for 3'-5'-*cyclic adenosine monophosphate* (*cAMP*) and is a signalling molecule which can be found in almost all eukaryotic organisms [115]. For example, it is used as a nutrient sensor in yeast, and is one of the building blocks of DNA. I wonder if it's responsible for the so-called 'gay gene'?

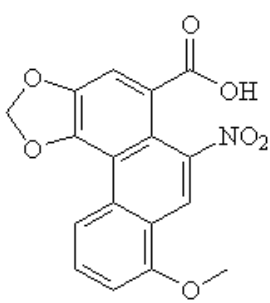


Anisole

Anisole sounds like a molecule the devil would be very interested in collecting, or maybe it's James Brown's ('The Godfather of Soul') favourite molecule? Anisole is aromatic in both the chemical and olfactory sense, and is used in perfumery. It is also an insect pheromone. If you have a lisp, please don't confuse *anisole* with *anethole*, which is a structurally related natural product which, incidentally, has the flavour of aniseed.

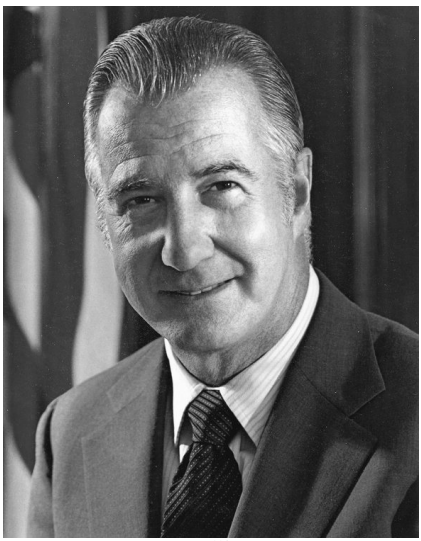
James Brown the Godfather of (ani-)sole?
(Copyright Getty Images, used with permission, photographer: Michael Ochs Archives/Stringer).

Aristolochic Acid



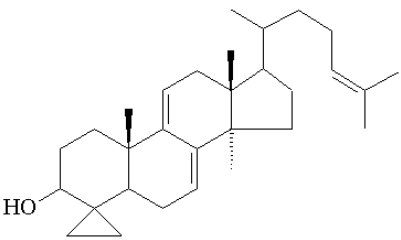
This aristocratic sounding molecule is derived from species of the birthwort plant (*aristolochia*) [116]. Plants containing the compound were used in herbal medicine as anti-inflammatory agents and for weight-loss, but they are now banned in the US and Europe as the compound is carcinogenic and toxic to the kidney [117].

Spiroagnosterol

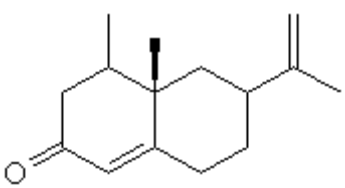


Spiro Agnew in 1972 [118].

I'm told [119] that years ago this molecule was called the "Vice Presidential Steroid" because of the similarity in name to Spiro Agnew, the Vice President of the U.S. from January 1969 until October 1973.



Nootkatone

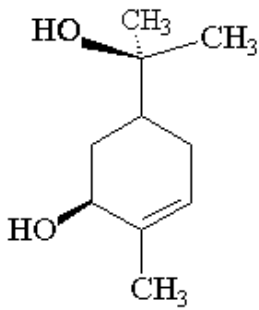


This molecule with a very silly name is used as a food additive to give grapefruit flavours, as well as in the perfume industry to give odours of citrus fruits and orange peel.

It got its name from the yellow cedar, or *Camaecyparis nootkatensis*, which was itself named after the native North American tribe called the *Nootka*.

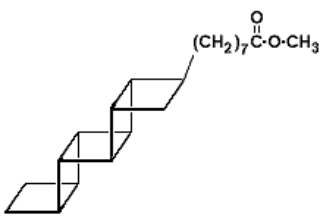
Sobrerol

I said *sobrerol*, not sombrero!
(Photo: PWM).



This isn't the Mexican hat, but a *mucolytic* molecule which dissolves thick mucus usually to help relieve respiratory difficulties. It's named after the Italian chemist Ascanio Sobrero who first determined its structure.

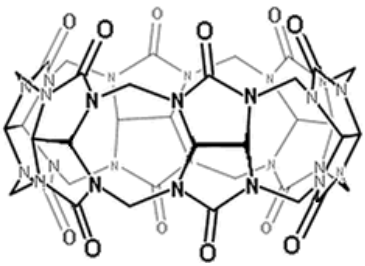
Ladderane



Ladderane is one example of a family of molecules which have a chain of fused *cyclobutane* rings, and which make up the bulk of dense membranes in certain unusual bacteria [120].

They were discovered in *anammox* bacteria, which anaerobically oxidize NH_3 to N_2. The staircase-like structure of *cis*-fused *cyclobutanes* has never before been seen in nature. The most abundant lipid in the bacteria is the *methyl ester* of a C_{20} fatty acid with five fused rings. Other *ladderane lipids* contain three fused *cyclobutane* rings attached to a *cyclohexane*.

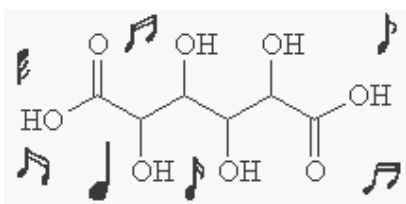
Cucurbituril



(Copyright Getty Images, used with permission. Photographer: Jose Luis Pelaez).

This molecule, which is shaped like a Halloween Jack-o'Lantern, is named after the Latin word for pumpkin (*Cucurbita pepo*). It is now finding lots of use in medical drugs or in potential molecular electronic devices [121] due to the fact that other long, thin molecules can be threaded through the hole in the centre to make so-called *rotaxanes*.

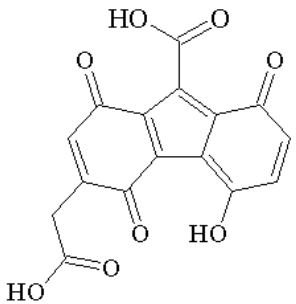
Mucic Acid



Pronounced '*music acid*', this is quite different to Acid Music... This chemical is obtained by the *nitric acid* oxidation of milk sugar (*lactose*), *dulcite*, *galactose*, *quercite* and most varieties of gum.

It is also called *galactaric acid*. The "*mucic acid test*" in basic bio-chemistry labs is a well-known test for *D*- or *L-galactose*. The test is carried out by oxidising the sample with concentrated *nitric acid*; *mucic acid* crystals will form after leaving the solution overnight. Isn't chemistry great? Just add some acid, and you get some music...

Hipposudoric Acid



Open up and say 'Aaaah'...

Hipposudoric acid is a malodorous blood-red pigment found in hippo sweat [122], and gets its name from hippo + *sudor* (Latin for sweat), so it's literally hippo-sweat acid! It absorbs ultraviolet light, thus blocking out the sun's rays like a sunscreen. It is also a natural antiseptic. Its red colour is responsible for the myth that hippos sweat blood.

And still on the hippo theme (although not the animal this time), there's a molecule called *Hipposulfate A*, which is a poisonous sulfated *sesterterpenoid* that's found in a sponge, *Hippospongia metachromans*, living near Okinawa [123].

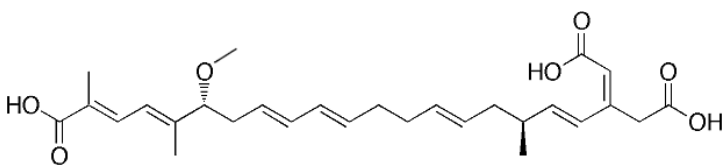
NUN

This molecule could be habit-forming... It's actually a linear molecule of *uranium nitride* N-U-N, made by inserting uranium atoms into molecular N_2 [124].

Bongkrekic acid

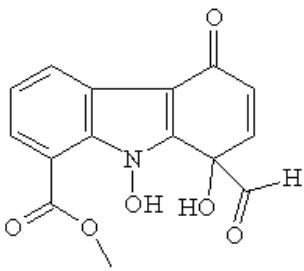
Any visitor to an Indonesian market or dinner table will almost certainly come across *tempe*. Closely resembling a Camembert cheese in colour and texture with a mushroom-like aroma, *tempe* is in fact one of the world's first soybean foods.

Soya *tempe* in a market in Jakarta.
(Photo: Sakurai Midori[125]).



It is normally harmless, but deep in the mountain villages in Central Java there used to be one rare deadly variety called *tempe Bongkrèk*. This *tempe* is so dangerous that the government has banned manufacture of it and imposed a prison sentence to anybody caught making or selling it, since it can contain a toxin more deadly than cyanide. Made from coconut residue after the oil has been extracted, and unlike good safe soybean *tempe*, *tempe Bongkrèk* may become contaminated with a bacterium that lives on the fermented coconut, called *Pseudomonas,* which produces the deadly respiratory toxin *Bongkrekic acid*[126]. In 1988 one batch killed 40 people within two days and over a hundred others were hospitalised. Despite the risks, the community in this area have nevertheless continued to eat *tempe Bongkrèk*, so irresistible is the taste and texture of this dangerous and illicit pleasure.

Coproverdine



This molecule is a new anti-tumor drug that was isolated from a sponge which was discovered off the coast of New Zealand. In the National Institute for Water and Atmospheric research (NIWA) archives, it is recorded as being "Green-sheep-sh*t like in appearance".

The alkaloid they discovered was cytotoxic, but they needed a catchy name for it. They settled on *coproverdine*: *copro* = dung, *ovis* = sheep, and *verdi* = green [127].

SnOT

Tritiated tin hydroxide goes by the wonderful chemical formula of *SnOT*. David Ball, a chemist in Cleveland Ohio, was working on isotopomers of SnOH, and after tritiating it found he got SnOT. His paper [128] concludes with the wonderful phrase "Since Wang *et al* did not use tritium substitution, we can state with certainty that there was no SnOT in their samples".

(Photo: PWM)

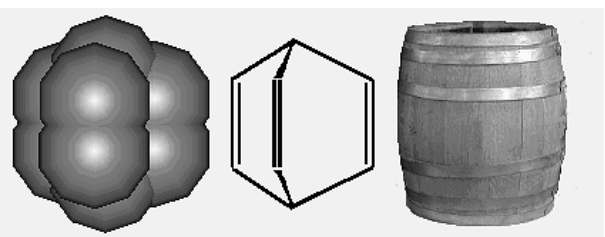
Bullvalene

This is a very unusual molecule, in that it is fluxional...all the carbons are equivalent due to the rapid movement of the double bonds around the structure [129]. It was first predicted to be like this over 20 years ago by Professor 'Bull' Doering, and was only synthesised in the lab many years later, whereupon his controversial predictions about the structure were verified.

Is this the correct structure – or just a load of 'bull'?

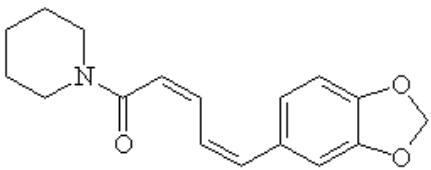
The name is thought to be derived from his nickname, 'Bull', but other reports [5] suggest that it was given its name by an irreverent and skeptical graduate student who thought such a structure couldn't exist, and was just a load of 'bull'.

Barrelene



This molecule is closely related to *bullvalene*, and got its name from its similarity to the shape and structure of a barrel, surprisingly enough [130].

Chavicine

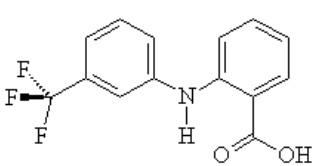


Caricature of a British 'chav'!
(Drawn by J.J. McCullough [131])

For non-UK readers, 'chav' is a British slang term for a subcultural stereotype of a youth who's fixated on fashions such as imitation gold, poorly made jewellery and fake designer clothing, combined with elements of working class British street fashion, such as trainers, tracksuit bottoms and polo shirts. *Chavicine* sounds like an ideal molecule for them, since it's the hot, sharp flavour found in black pepper – perfect to put on a late night pizza or kebab on the way home from the pub.

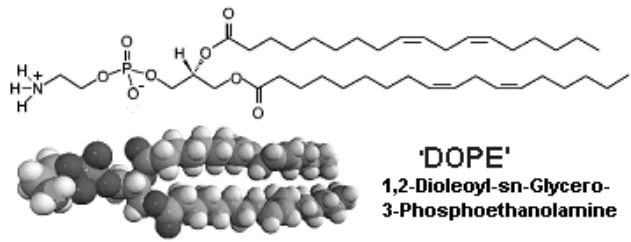
Flufenamic Acid

This molecule with a very fluffy name has anti-inflammatory and antipyretic properties, and is used to treat inflammatory rheumatoid diseases and relieve acute pain.



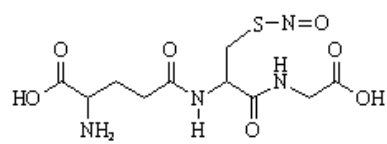
Its chemical name is *N*-(3-*trifluoromethylphenyl*)*anthranilic acid*, which doesn't sound quite as friendly and fluffy as its common name. In other languages it is called *Flufenaminsäure* (German), *flufenaminezuur* (Dutch), ácido *flufenamico*! (Spanish), and *acide flufenamique* (French).

DOPE



Apparently, *DOPE* is commonly used by membrane chemists and biochemists - which is something I've always suspected... It's actually short for 1,2-*Dioleoyl-sn-Glycero*-3-*Phosphoethanolamine*, and it's a *phospholipid* used for research into membrane structures. A variant on this is called *DOGS*, so if you take *DOPE*, you may go to the *DOGS* [132].

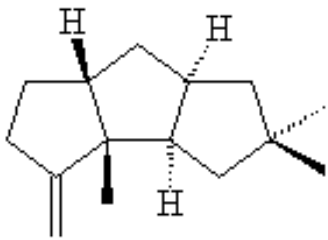
SNOG



Left: Britney Spears and Madonna sharing a *S-Nitrosoglutathione* at the 2003 MTCV awards.
(Copyright Getty Images, used with permission. Photographer: Chris Polk).

SNOG is a utility carrier of *nitric oxide* which breaks down to produce *nitric oxide* and a *glutathione* radical at pH 7.4. Its proper chemical name is *S-Nitrosoglutathione*. Unsurprisingly, one effect of *SNOG* is that it apparently causes smooth muscle relaxation... For those of you unfamiliar with UK slang, a 'snog' is a deep passionate kiss, similar to the one Britney is giving Madonna in the photo above.

Hirsutene

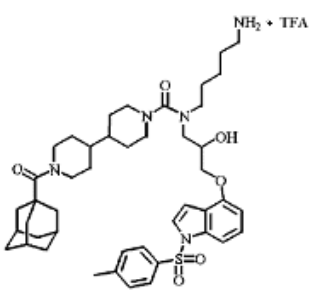


Someone's been putting *hirsutene* in the dog food again…

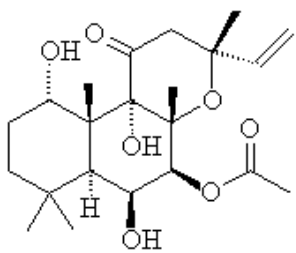
This is an important antibiotic that's derived from various fungi that live on dead wood, including *Stereum hirsutum* which provided its name [133]. Perhaps a side-effect of this molecule is to makes things hairy..? Or maybe it counteracts the effects of *boldine*, mentioned earlier…

Wrenchnolol

This is a molecule that looks like a monkey wrench, and is an anti-cancer drug [134]. The "jaw" part of the compound mimics part of a transcription factor molecule, and the "handle" region accepts chemical modifications for a range of analysis.



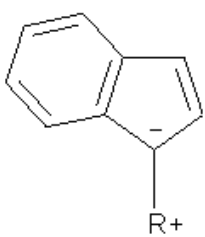
Forskolin



Despite the odd name, *forskolin* is not what they remove from the baby during ritual circumcision. In India, practitioners of traditional *Ayurvedic* medicine have long used the herb *Coleus forskohlii* to treat asthma, heart disease, and a range of other ailments.

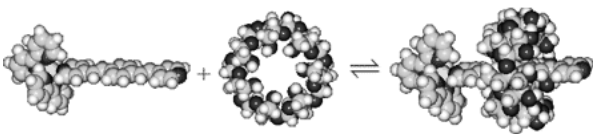
In the 1970s, researchers isolated a chemically active ingredient in the herb and called it *forskolin*[135]. Now available in supplement form, this extract is commonly recommended for treating hypothyroidism, a condition in which the thyroid gland produces too little thyroid hormone. *Forskolin* is believed to stimulate the release of this hormone, thus relieving symptoms as fatigue, depression, weight gain, and...of course… dry skin.

Indenyl



This sounds like it could be a pollutant found in some Egyptian rivers (*i.e.* in de Nile...), but it's actually a fusion of a *cyclopentadienyl* ring with a *benzene* ring, and is often used as a ligand for *metallocene* synthesis.

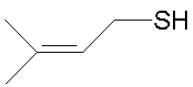
Ru(Tris)BiPy-on-a-stick



Ru(Tris)BiPy-on-a-stick (left) plus *cyclodextrin* (right) gettin' it together [136].
(Figure reproduced with permission of the American Chemical Society).

This one is a bit of a cheat, since this name (pronounced Rew-Tris-Bip-ee on a stick) is not officially recognised. But I'm reliably informed that inorganic chemists who deal with this compound use this nickname regularly to avoid having to deal with its even more cumbersome IUPAC name. The other reason to include it is the wonderfully suggestive figure from the paper (above) of the molecule threading through the hole in *cyclodextrin*.

Skunky Thiol

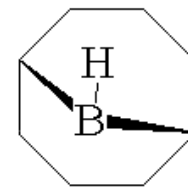


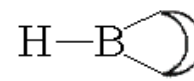
This molecule is what makes beer taste bad after it's been left exposed to sunlight for a few hours [137].

The actual name is 3-*methylbut*-2-*ene*-1-*thiol*, or 3-*MBT* for short, but since it's related to molecules found in skunk spray, and it stinks, it's also known as *skunky thiol*. Only a few nanograms of this *thiol* in one litre of beer are enough to give the offensive flavour.

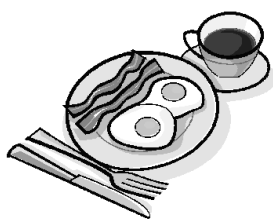
Banana Borane

This isn't an official name, but I'm told that many chemists who work in the *organoborane* field use the nickname *banana borane* to describe molecules such as 9-*borabicyclo*[3,3,1]*nonane*, abbreviated *BBN*. This is because rather than draw out the proper structure (top), they simply draw the *borane* as a banana shape with the bridging B group sticking out (bottom).

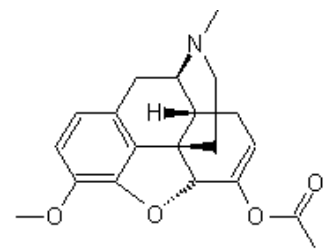




Thebacon



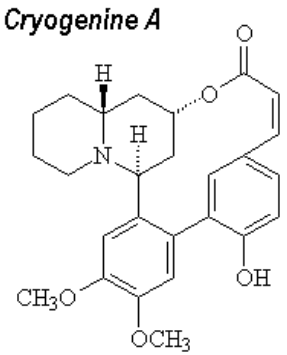
The bacon and the eggs and the coffee.

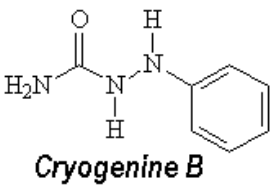


Just thebacon.

This molecule certainly brings home the-bacon! It has a similar structure to *diamorphine* (*heroin*) but has only one *acetyl* group instead of two, and the other group is replaced with a CH_3O- group. Apparently, *thebacon hydrochloride* is a centrally acting cough suppressant sometimes used to treat coughs. Maybe it should taken together with *sandwicensin* to get 'the bacon sandwich'. *Thebacon* is derived from *thebaine* (would doing the synthesis be *the bane* of some poor chemist's life!) whose name comes from the Latin word *thebacus*, meaning 'from Thebes'. *Thebain* is found in *opium*, and since in the 19th century much of the world's *opium* came from Egypt, it was named after its origin, the city of Thebes.

Cryogenine



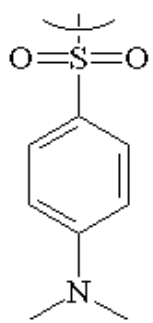


Cryogenine A (also known as *vertine*) is the active constituent of the shrubby yellowcrest (*Sinicuichi*) plant [138].

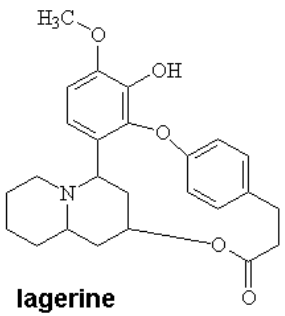
It can give audio hallucinations and produces mild euphoria and aching muscles in large doses. I don't know why it is called *cryogenine*... maybe because after you stop using it you go through very, very cold turkey? In fact there are two totally unrelated, and different molecules called *cryogenine*. The other molecule, *cryogenine B*, is usually called 1-*phenylsemicarbazide*, is used to reduce fever – which is appropriate given its name!

Damsyl

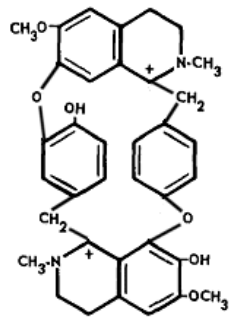
When this molecular fragment reacts, could it be called a '*damsyl* in distress'? The name is coined by contraction of its full name, 4-(*dimethylamino*)*benzenesulfonyl*.



Lagerine and Bebeerine



lagerine

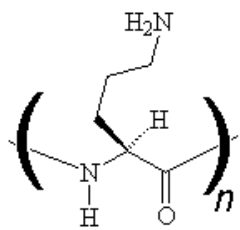


bebeerine

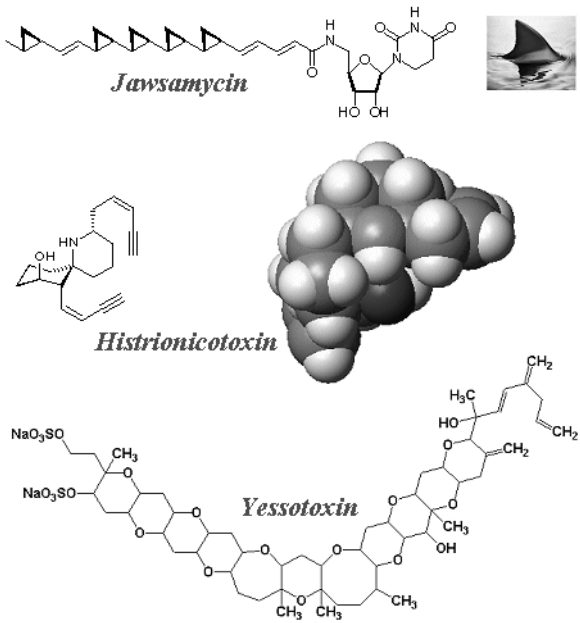
I wonder if *lagerine* is sold by the pint? It actually has nothing to do with beer, it gets its name from being a constituent of the crape myrtle (*Lagerstroemia indica L.*) plant [139]. *Bebeerine* too, has nothing to do with beer. It's an alkaloid molecule derived from the Caribbean *bebeeru* tree, and helps to protect it from attack by beetles [140].

PORN

Now that I've put the word *PORN* in this book, it'll either get banned or increase the sales hugely! Unfortunately, this *PORN* is simply the acronym for *poly-L-ornithine*, a molecule used in cell culture experiments. I suppose that forming a polymer does involve lots of frantic couplings...so *PORN* maybe isn't such an inappropriate name after all.



Jawsamycin, Histrionicotoxin and Yessotoxin

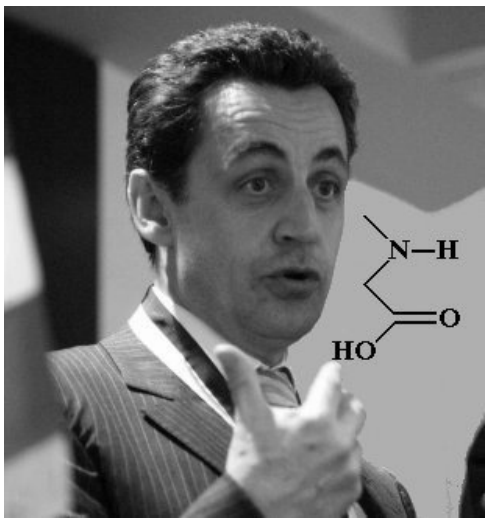


These three molecules are all highly toxic, and are normally isolated from biological sources. *Jawsamycin* was discovered in 1990 by Fujisawa [141], a Japanese pharmaceutical company, but it has only recently been synthesised. The metabolite is composed of a chain of five triangular *cyclopropyls*, which giving it its name because of the resemblance to shark's teeth [142,143]. The compound, however, has 10 chiral centres - for a total of 1024 possible isomers, only one of which is *jawsamycin*. It can be used to fight fungal infections - the molecule just gobbles them up!

Histrionicotoxin sounds dramatic - and it is! It's a poison found on the skin of a tree frog (*Dendrobates histrionicus*) in South America, and is used by the native Indians on their blow-pipe darts [144].

Yessotoxin was first isolated from the digestive organs from scallops (*Patinopecten yessoensis*) in Japan and is believed to be produced by microalgae [145].

Sarcosine

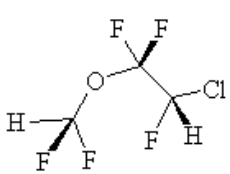


Nicolas Sarkozy

This is one for French readers. Nicolas Sarkozy is currently the President of France, and, as such, it's appropriate that he has his own molecule. *Sarcosine* is a sweetish crystalline *amino acid* found in muscles and other tissues, and is also called *N-methylglycine*. It was discovered and named by Liebig (presumably using his condenser), and is present in foods such as egg yolks, turkey, ham and vegetables. It's also used in the production of toothpaste.

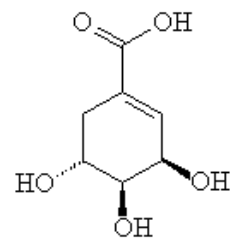
Another molecule which sounds odd in French (but not in English) is *pyralene*, which has been used in the past as an insulating oil in electric transformers. In French it is pronounced *pire haleine*, which means "worst breath". This is ironic, since use of *pyralene* was abandoned after transformer fires were giving off toxic fumes.

Enflurane



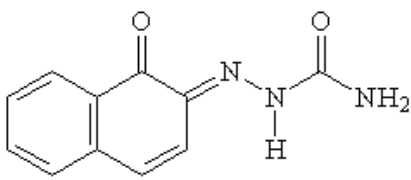
Yet another one for the French speakers... *Enflure* in French means a twit, a clot, or a jerk, or can also mean a swelling or inflammation. *Enflurane* is an outdated *halogenated ether* that was used for inhalation anesthesia in the 1970's and 80's.

Shikimic Acid



In the interests of fairness, I should include a molecule for German-speaking readers, too. *Shikimic* sounds very like the German word *Schickimicki*, which means a (snobbish) member of the in-crowd, a trend-setter, or a 'designer-label-wearing' sort of person. But the trendy *shikimic acid* was first isolated from the Japanese flower *shikimi*, hence its name. It's used as a starting molecule in the synthesis of the anti-flu drug *Tamiflu*[146].

Naftazone

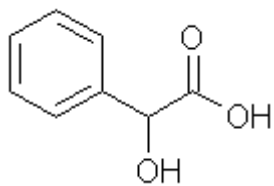


This sounds like a pretty naff molecule. (For non-UK readers, 'naff' is English slang for something that's poor quality, unfashionable or just plain rubbish).

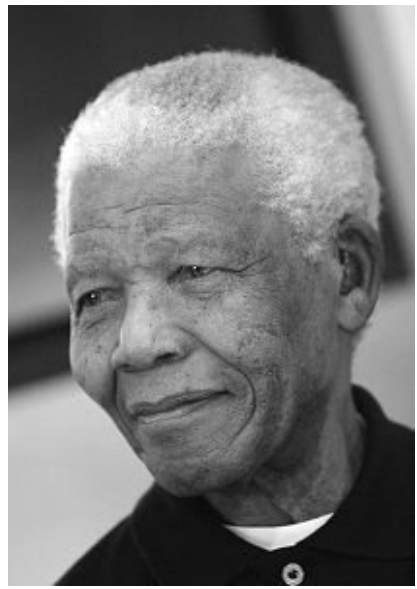
It's used as a drug to protect blood vessels (a 'vasoprotector') - so, maybe it's not quite so naff after all. Its name comes from a contraction of its official name (1,2-*naphthoquinone*-2-*semicarbazone*) and it has nothing whatsoever to do with the North American Free Trade Agreement (NAFTA).

Mandelic Acid

Mandelic acid is not named after Nelson Mandela, the world famous South African politician and winner of the 1993 Nobel Peace Prize, although his youthful appearance might be due to it....as *mandelic acid* is often used in skin creams to smooth away wrinkles. It's also used as an antiseptic ingredient particularly against urinary tract infections.

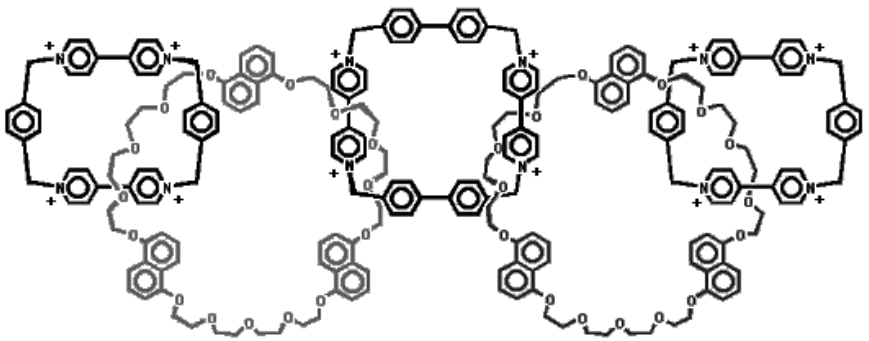


It's named after the German word *Mandel*, meaning almonds, since it's extracted by heating bitter almonds with HCl.



Nelson Mandela in 2007
(Copyright Getty Images, used with permission, photographer: Gianluigi Guercia/AFP).

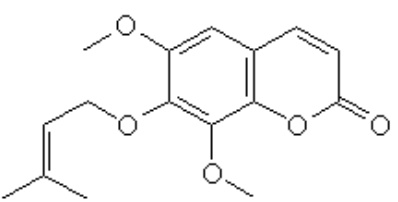
Olympiadane



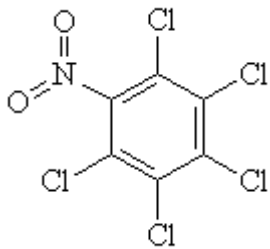
This molecule consists of five interlocking rings, which mimics the Olympic Games symbol, and so is named *olympiadane* [147]. It was first made in 1994, in commemoration of the Olympic Games due in 2 year's time. The successful linkage of these highly complex synthetic molecules means that molecular chains of any length could be constructed with many applications, particularly in the areas of information storage systems and the creation of a 'molecular computer'.

Puberulin

This wonderfully named molecule gets its name from the fact that it's isolated from the African shrub *A. puberula*. Hmm, I wonder what you'd measure with a *pube-rula*...?



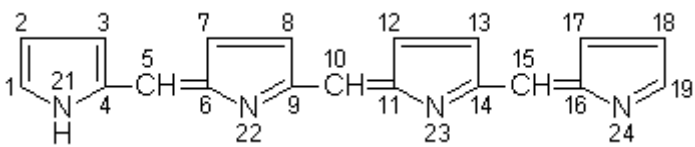
Fartox



Guess who's been using *Fartox*...

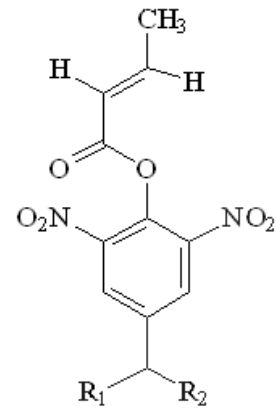
On a related theme, this molecule is actually called 1,2,3,4,5-*pentachloro*-6-*nitrobenzene*, but goes by a variety of rather silly tradenames [148], including *Quintozene*, *Folidol*, *Tubergran*, *Terrafun*, *Earthcide* and best of all, *Fartox*. It seems somehow appropriate that *Fartox* should be a pale yellow solid with a slightly musty odour. It has been used as a soil fungicide since the 1930's, but I have no idea how it came to have this silly name. Maybe it was due to a side-effect of eating fruit sprayed with it?

Biline



A newspaper reporter's favourite molecule? (They always want their by-line). This is a bile pigment, and there are various versions depending where the H goes (in the diagram it's on N-21, so the molecule shown is 21*H*-*biline*), and what side chains (if any) there are.

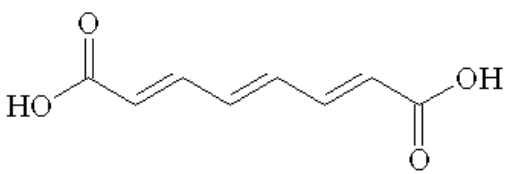
Dinocap



Dinocap sounds like a dinosaur's hat, or a hat that looks like a dinosaur. It's a dark red viscous liquid that's used to kill mites, fungus and mildew on crops, and goes by the trade name *Karathane*. There are 2 different versions of *dinocap*; *dinocap*-4 is the one shown on the right and *dinocap*-6 swaps the positions of one of the NO_2 groups and the $R_1(CH_2)R_2$ side-group. In either case, the liquid is actually a mixture of different isomers, with $R_1=CH_3(CH_2)_n$ and $R_2=CH_3(CH_2)_{5-n}$.

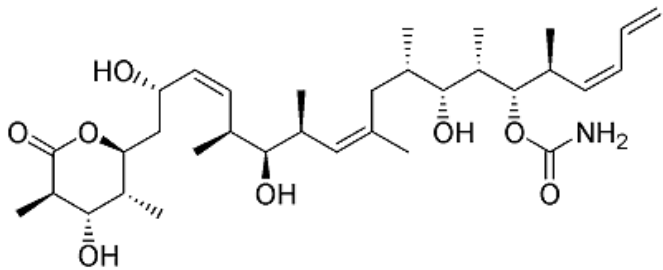
I'm pretty sure the '*din*-' part of the name comes from *dinitro*-, the '*-oc-*' from *octylphenyl crotonate*, but the '*-ap*' remains a mystery.

Tamuic Acid



Tamuic acid is a shorthand term for an organic acid with a huge unwieldy name that's used as a ligand in organometallic chemistry. The name comes from the place it was discovered, Texas A&M University [149]. The related molecule with 4 C=C units was named by the same group *texic acid* (after Texas). On the same theme, there's also *tuftsin*, a *tetrapeptide* named after Tufts University in Boston where it was discovered. If the trend continues, let's hope that Cambridge University Nano-Technology centre don't discover a molecule soon!

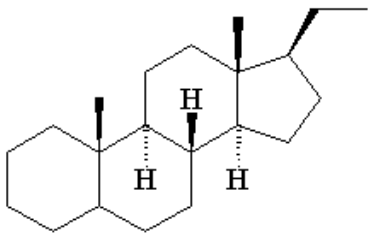
Discodermolide



Could this be John Travolta's favourite molecule? It's a recently discovered *polyketide* natural product found to be a potent inhibitor of tumor cell growth, and it gets its name since it was first isolated in 1990 from the Caribbean marine sponge *Discodermia dissoluta*[150]. Since the compound is light-sensitive, the sponge must be harvested at a minimum depth of 33 metres - so, no disco lighting there then…

Right: Does swallowing *discodermalide* bring on a Saturday night fever?
(Photo: John Travolta in 'Saturday Night Fever', copyright Getty Images, reproduced with permission. Photographer: Michael Ochs archives).

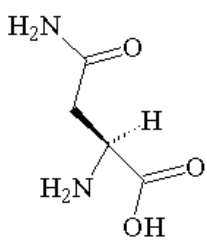
Pregnane



As you might expect, *pregnane* is the 'parent' steroid for many hormones, including the one important during pregnancy, *progesterone*.

She's been at the *pregnane* again...

Asparagine

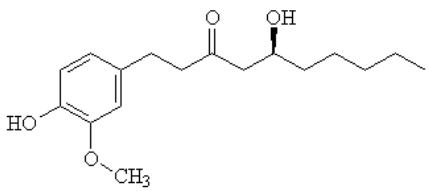


I wonder if this molecule tastes of asparagus? In fact, it gets its name since it was first isolated in 1806 from asparagus juice, and was the first *amino acid* to be isolated. It is one of the 20 most common natural *amino acids* on Earth and can be synthesised in the body.

(Photo: PWM)

Interestingly, the smell observed in the urine of some individuals after consumption of asparagus is attributed to a byproduct of the metabolic breakdown of *asparagines* called *asparagine-amino-succinic-acid monoamide*. However, some scientists disagree and implicate other substances in the smell, especially *methanethiol*.

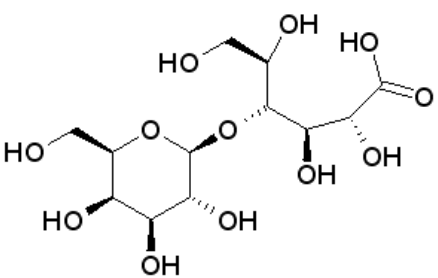
Gingerol



Right: Was Elizabeth I a fan of *gingerol*[151].

Gingerol isn't the molecule responsible for ginger hair and freckles, or even gingivitis. Instead, it's the active constituent of fresh ginger. *Gingerol* is a relative of *capsaicin*, the compound that gives chilli peppers their spiciness. It's normally found as a pungent yellow oil, but also can form a low-melting crystalline solid. Cooking ginger transforms *gingerol* into the compound with a 'zing', *zingerone*.

Bionic Acids



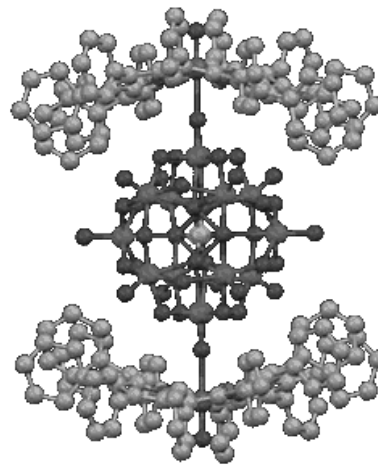
I wonder if these cost six million dollars and give you super strength? Actually, there are a number of *bionic acids* which are derived from *cellobiose*, which is a sugar digestion product of *cellulose*.

The differences come from the component sugars which make up the reduced form, and include *maltobionic*, *melibionic*, *cellobionic*, *aldobionic* and *lactobionic acid* (the one shown above).

Porphyrin Hamburger

Do you want fries with that?

Above: A real hamburger [152].

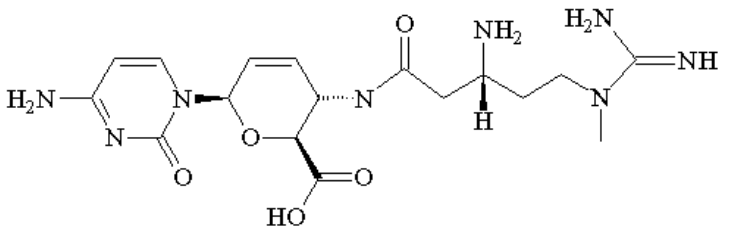


Right: A *porphyrin hamburger*
(Image reproduced with permission of the RSC from ref.[153]).

A team of researchers at Osaka University, Japan, fused a *molybdenum-porphyrin* complex and a *tungsten polyoxometalate* to form a compound they have named the *porphyrin hamburger* [153]. Two saddle-shaped *porphyrin* complexes make up the burger buns, while a cluster of *tungsten oxide* anions surrounding a central silicon cation, known as a *polyoxometalate*, forms the meat sandwiched between them. The molecules are joined by stable coordination bonds.

This must give plenty of opportunity for derivatives along the lines of *porphyrin cheeseburger*. Or perhaps you could even attach *penguinone* to make a *penguin burger*? Or even attach a molecule of *cocaine* to get a burger and coke?

Blasticidin

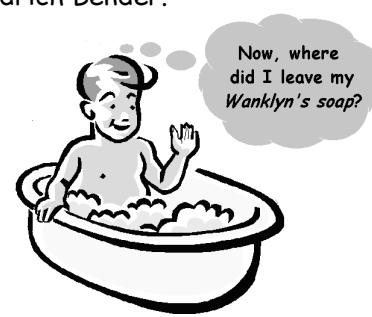


And here's one for the military, or maybe just a gung-ho chemist (Blast its side in!). It's actually an antibiotic fungicide, and is also used in genetic engineering experiments to fuse pieces of DNA together to make resistant genes.

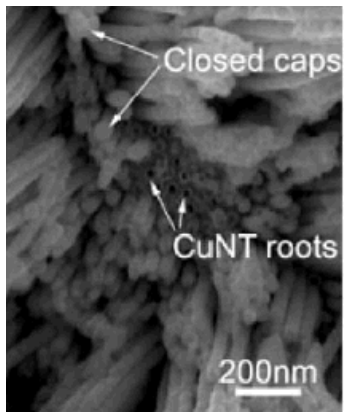
Bender's salt and Wanklyn's soap

Is *Bender's salt* what gay chemists put on their fries? Or maybe it's the salt that Bender from the TV cartoon series 'Futurama' would use? *Bender's salt* (*potassium ethylthiocarbonate*, $C_3H_5KO_2S$) is named after the German chemist Friedrich Bender.

On a similar theme, there's *Wanklyn's soap* (used a lot by teenaged boys, no doubt!). According to the label it's flammable and has one degree of hardness! *Wanklyn's Soap* is an ethanolic solution of soap which was formerly used to test for water hardness, and formed the basis of the Wanklyn Scale of hardness.



CuNT

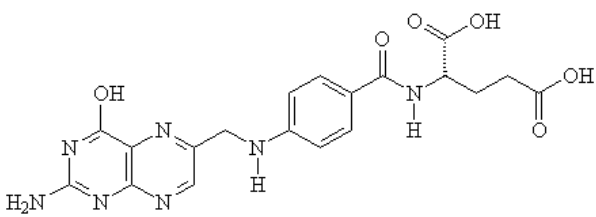


Are *CuNT* roots related to beetroots?
(Image used from ref.[154] with permission of the RSC).

This one must be rudest of all acronyms! *Carbon nanotubes* are often abbreviated to *CNTs*, and single-walled ones to *SWCNTs*. But, unbelievably, when a Chinese group recently fabricated *copper nanotubes*[154], they decided to call them *CuNTs*! In the same paper they describe *bismuth nanotubes*, and called them *BiNTs*.

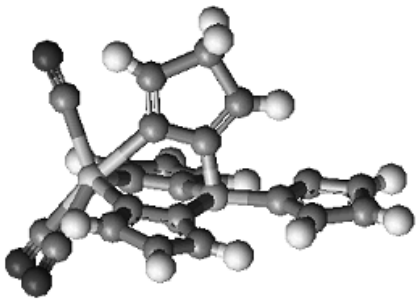
Either they named these 2 structures for a bet - just to see if the Royal Society of Chemistry would publish a paper containing numerous (over 50!) references to *BiNTs* and *CuNTs* - or they just didn't realise the meanings of these two acronyms. Or maybe they just did it to increase the number of hits they receive from online searches.

Folk Acid



This is nothing to do with folk music, or even acid folk, it is simply a mis-spelling of *folic acid*, which itself gets its name from the Latin word *folium* meaning 'leaf'. This seems to be a particularly common mis-spelling, and occurs even in scientific papers and textbooks (try searching for it in Google), maybe a result of word-processing programs automatically 'correcting' words they don't recognise, or just that scientists can't spell.

Scorpionate ligands

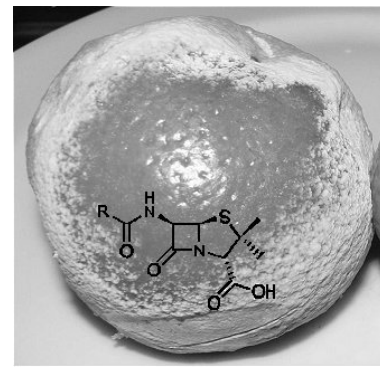


The *scorpionate ligand* gets its name from the fact that it can bind to a metal with three donor sites. The first two are like the pincers of a scorpion [155].

The third donor site (the 'tail') reaches over the plane formed by the metal and the 'pincers' to bind to the metal from above, like a scorpion grabbing the metal with two pincers before stinging it. The most popular class of *scorpionates* are the *Tp ligands* (*tris*(*pyrazolyl*)*hydroborates*), and, above, one is shown bonding to a $Mn(CO)_3$ group. Another scorpion-like molecule is *bis*([1,2]*dithiolo*)-[1,4]*thiazine*, which is sometimes unofficially called *sscorpionine* [156].

Penicillin

I thought I'd end this section with the most well-known antibiotic compound. Although everyone has heard of *penicillin*, and some may even know it's named after the *Penicillium* mould, very few realise that this came originally from the Latin word for brush (*penicillus*), and that this ultimately came from the diminutive of *penis* (meaning 'tail' or 'male member'). This is quite appropriate, since one of the first uses for this 'small penis' antibiotic was to treat soldiers suffering from VD during WW2!



Penicillium mold on a mandarin orange [157], and the core structure of *penicillin* where R is a variable side-group such as *phenyl*.

Molecules named after places

This isn't all of them, but there are quite a few: *himalayamine, pakistanamine, americanin, ecuadorin, grenadadiene, virginiamycin, mauritiamine, alaskene, texaphyrin, alaskaphyrin, taiwanins, montanastatin, mediterranenols, bahamamide, arizonins, pacifenol, brazilin, argentinine, guyanin, jamaicin, louisianins, floridanolide, oregonenes, utahin, michigazone, ukrain, malaysic acid, thailandine, mongolicains, vanuatine, australinols, tasmanine, vietnamine, angolamycin, gabonine, senegalene, madagascarin, tanzanene, ugandoside, yemenimycin, syriamycin, jordanine, atlantone, mexicanolide, panamine, albanols, srilankenyne, seychellogenine* and *borneol*.

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