

WISDOM FROM THE WASTELANDS

Issue #28:
Nanotechnology I



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Nanotechnology has existed since the late 20th century. At first, the tiny machines were used mostly in medicine and genetic manipulation, but technological advances brought wider application. Many of these breakthroughs helped make the Ancients' lives easier, but others became microscopic dogs of war, let slip to wreak havoc and destruction. The first in our series on nanotechnology, this issue focuses on how the concept might work in your campaign. It introduces the necessary game mechanics and provides a few example nanites to illustrate the technology at play. Later issues will present beneficial varieties, nanite terror weapons, and some supporting medical items.

Robotic and Organic Nanites

Nanites are constructed in two basic forms, both with strengths and weaknesses. First are molecule-sized robots controlled by simple computers. These can be pre-programmed for a specific task, or come as 'blank slates' needing orders before setting about their missions. The more insidious second type are organic nanites, biological machines grown like viruses, that also have a basic intelligence and programming. These living machines have their mission instructions encoded during creation, so this cannot be changed.

While stored, nanites could look like almost anything: a grey powder, colored liquid, rust flakes—whatever the Mutant Lord desires. Robotic types are most often held in small armaglass, duralloy, or plasteel containers and are usually inert, waiting for a programmer to send an activation signal (see below), or for certain conditions to be met. Organic nanites are kept in similar containers, but are suspended in a bath of nutrients and chemicals. This keeps them alive and inert until introduced into a suitable environment, like a human body, and activated. Outside a host or storage medium



organic nanites will perish in 1d6 minutes. Robotic versions do not have this vulnerability.

Nanite Strength

Not all nanites are created equal. Because of variations in structural material or electronic durability, different manufacturers, and the nanites' particular missions, some are just heartier than others. For example, nanites used for exfoliating skin do not need the potency and durability required of military-grade weapon nanites. As a game mechanic, this term refers to a saving throw bonus nanites get whenever they encounter something that could destroy them, e.g., a host's immune system or an electromagnetic pulse (EMP) attack.

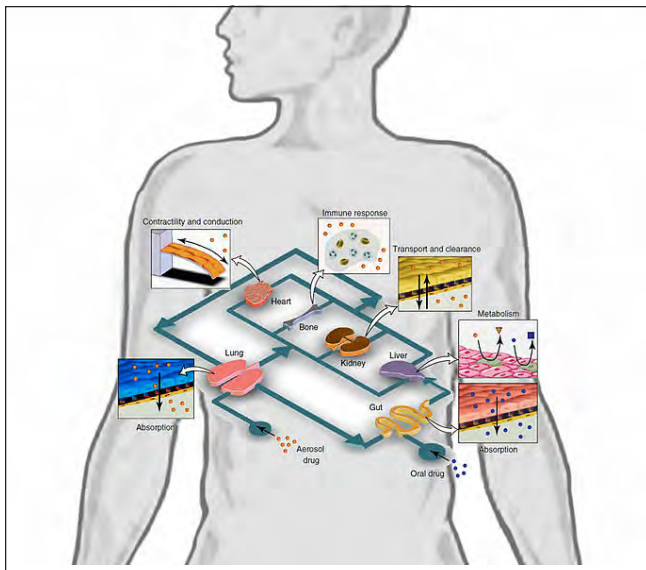
Hosting Nanites

Many nanite strains must enter a host before they can multiply. The ML can decide if hypodermic needles, jet

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This publication is dedicated to providing useful information, game content, and ideas to players of modern, science fiction, and post-apocalyptic table-top and role-playing games in general and to fans of Goblinoid Games' *Mutant Future* RPG in particular. The material contained herein are compatible with it and any others that use the "Basic" system introduced in the most popular role-playing games of the early 1970s and are easily adaptable to many other games (especially successor systems, to include those covered by the Open Game License).



injectors, contact gels, pills, or some other mechanism is appropriate.

When nanites are first exposed to a living creature, the target must save versus poison, with a penalty equal to the nanites' strength. Even if purposely injected with beneficial nanites, the host's immune system will try to repel the invaders. And, unfortunately, a character cannot choose to fail his saving throw. To overcome this problem, the Ancients created the Immuno-Suppressor drug (see below), which provides nanites time to infiltrate a patient's body and start to work.

Once inside a host, nanites must acclimate and spread through the body before producing their intended effect. This incubation period is listed with each nanite description, and can take anywhere from a few seconds to a day or longer. The self-replication does not harm a host, unless the nanites are destructive by nature.

After completing their mission some nanite strains stay in a host's body. But despite their affect on the host's genome, the nanites' positive effects cannot be passed on to children. Other nanites, mainly organic types, shut down and are harmlessly flushed from the body. To speed this process—in cases of accidental contact or intentional exposure to weaponized nanite strains—the Ancients created the Purge drug (see below) to help eliminate nanites from the host.

Mutants and Nanites

Most mutants can host nanites without either suffering harmful side effects, unless the ML decides otherwise. There are three exceptions to this rule. Mutations providing immunity to disease also destroy organic nanites. Mutations generating EMPs will destroy robotic nanites. And, because both types are sensitive to electricity, creatures generating this form of energy cannot host either kind.

Maximum Number of Swarms

Because of how nanite systems interact with the host and each other, a body can tolerate only so many swarms at one time. This number is equal to 1/4 of the host's Constitution

score (rounding down). For example, a host with a 13 Constitution can have three swarms in his body.

If the host is exposed to more swarms than he can tolerate, compare the nanite strength of each. In most cases, the swarm with the lowest strength will simply shut down and be purged from the body. However, if a swarm was designed to harm the host, these nanites will first seek out and destroy any other swarms in the host before beginning their intended destructive work.

For information regarding nanite strengths, see the individual nanite descriptions for base strengths and the Programming section below for modifiers.

Nanite Compatibility

Like the drugs and medical equipment presented in *Wisdom from the Wastelands* issue #8, organic nanites were originally designed to work on Pure Humans. When introduced to a previously unknown genome (mutants, plants, or animals), the nanites might not work properly. This can often produce strange or unexpected side effects, unless the nanites were specifically created to work with or against that genome (ML's decision).

Nanite Compatibility Table

Genotype	Treatment Effective on 2d6
Ancients	Always
Aquatics	2-10
Body Masters	-1 Per Mutation*
Exotics	2-10
Humans	Always (until mutated)
Insectoids	Never
Mental Masters	-1 Per Mutation*
Mutated Animal	2-6, and -1 Per Mutation*
Mutated Human	-1 Per Mutation
Mutated Plant	Never
Pure Human	Always

* See description below

To see if an organic nanite swarm will be effective, consult the Nanite Compatibility Table and roll 2d6 (if applicable). For example, organic nanites will work in a mutant human with two mutations on a roll of 10 or less, while a mutant human with eight mutations will only benefit on a roll of 2-4. Although aquatics and exotics are considered pure humans, there is a slight chance nanites will not work correctly, so these characters must always check on the Nanite Compatibility Table.

Unless they are a veterinary strain (determined by the ML), organic nanites will only work in mutant animals on a roll of 6 or less, -1 for every mutation the animal possesses. If a mutant animal has more than 4 mutations, the organic nanites will always fail. This includes mutant animals that have taken on humanoid physiologies.

Organic nanites usually have no effect on androids, synthetics, or replicants of any type (unless specified by the ML), but many types of robotic nanites will work as programmed.

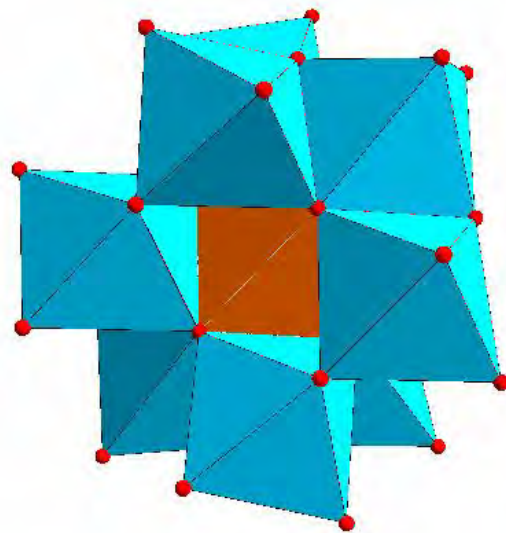
If the compatibility check fails, roll percentile dice and consult the table below:

Organic Nanite Failure Table

d100	Effect
01-25	The nanites work, but only to half the usual effect.
26-50	No effect. The body absorbs the nanites without harm.
51-70	The nanites go on a destructive rampage before dying, causing 3d6 points of damage to the host.
71-80	The nanites attack the host's nervous system, reducing his Dexterity by 2d6. If his Dexterity falls to zero, the host dies. Otherwise, the lost points return at his normal healing rate.
81-90	The nanites attack the host's muscles, reducing her Strength by 2d6. If her Strength falls to zero, the host dies. Otherwise, the lost points return at her normal healing rate.
91-93	The nanites mutate into an entirely different type, randomly determined or left up to the ML's imagination.
94-96	The nanites mutate and trigger 'junk genes' normally dormant in the host's genome. The ML should roll for 1d3 diseases and have the host save against each (unless immune to disease). The host will be highly contagious until the disease is treated, purged from his body, or runs its course, so everyone coming within 10' must save or be infected.
97-98	The nanites attack the host's brain, reducing both Intelligence and Willpower by 1d6. The host must also save versus death for each of her mental mutations. If a save fails, the host cannot use or benefit from the mutation for 3d6 days. Rolling a natural 1 means the mutation is permanently lost.
99	The nanites mutate into Destroyers (see below), killing the host and reducing his body to puddle of goo. The nanites die once the body is destroyed.
100	As above, but the nanites are not destroyed! They continue wreaking havoc, reducing anything in their path to pools of base components until they are destroyed (fire will work, or see Destroying Nanites below).

Nanites and Parasitic Mutations

These entities do not get along. The parasitic organisms view nanites as invaders and try to destroy them. Because of this, the host must save versus poison, with a penalty equal to the



swarm's strength. If the saving throw succeeds, the parasitic mutation successfully defends the host and destroys the nanites. However, if the saving throw fails, the nanites kill the parasitic mutation.

Destroying Nanites

Sometimes nanites must be destroyed, either to stop them attacking an ally or to damage an enemy. The best way to do this is with intense energy: robotic nanites are vulnerable to EMP attacks, while electricity affects both types.

Anytime a host with robotic nanites is hit with an EMP, the nanites must save versus energy. They use the host's saving throw with a -10 penalty, offset by the strength of the nanite swarm. For example, a nanite swarm with a strength of 3 would have -7 penalty. If the save fails, the nanites are destroyed.

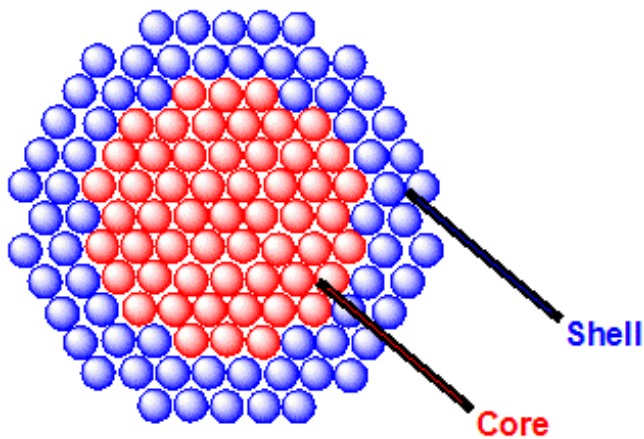
Certain types of nanites were designed to withstand EMP attacks. These 'hardened' nanites are typically military grade, although any type of swarm could be proofed this way. Hardened nanites do not suffer the -10 penalty to saves against EMP, in fact they gain their nanite strength as a bonus to resist the attack!

If a host loses more than 50% of her hit points from electrical attacks, the nanites must save versus energy (using the host's save) or be destroyed. Unlike with EMPs, nanites suffer no saving throw penalty against this attack.

Nanites are essentially immune to condition level damage because they self-replicate, so all nanotechnology is always considered to be condition level 5. Even if only a single nanite survives, the entire colony can be rebuilt in a few hours.

Programming Nanites

Many robotic nanites are found in an essentially neutral condition and must be given instructions with a 'programmer' before activating. Although many types and sizes are available, the typical unit is a simple hand-held device the size of a deck of cards. A tiny hologram projector on top displays all pertinent information, including any program



options available for the nanites.

After the user chose a specific task, some programmers can send instructions to the nanites through a wireless communication link, while others models take a small number of nanites into a tiny chamber and program them directly. The wireless version was mainly for military and corporate use, while the chambered programmer was more widely available to everyday consumers. The consumer versions usually contained only one type of programming, although there were models available with more options.

Note that only robotic nanites can be programmed this way. Organic nanites have their mission written directly into their genetic coding. This process is left up to the ML's imagination and will not affect game play, unless the players somehow start to create their own nanites.

Because programming often involves making radical changes to the nanites' physical structure, it is very difficult or impossible to change once done. Only wireless devices can attempt reprogramming since capturing a sufficient number of nanites for direct alteration is typically out of the question. The procedure is a contested d20 roll, with the nanites and programmer adding their respective strengths to their rolls. The nanites' strength is listed in the individual descriptions and the programmer power is listed in the table below. If the programmer wins, it can change the nanites' programming to something completely new. If the nanites' program strength wins, the reprogrammed fails.

EXAMPLE NANITES

Here are four sample nanites that you can use as-is and as models for your own creations.

Augmenters

Strength: +3; Incubation: 8d6 hours

Developed during the brave new age of designer bodies, Augmenter nanites can re-write a host's genome, permanently providing new abilities or increased statistics. This process allows Pure Humans to gain any of the mutations listed below without losing their status as Pure Humans, or suffering from any sort of genetic abnormality.

These robotic nanites must be programmed with the chosen augmentation before the procedure can take place. First, the programmer samples and analyzes the host's genes. This takes 24 hours, after which the computer programs the nanites with the required changes. The nanites then put the host into a coma for 8d6 hours while they alter his genetic code. Once this work is finished the host wakes up with a brand new ability.

The host can only undergo a number of Augmenter treatments equal to 1/4 of his Constitution score (rounded down). A programmer computer will not allow additional treatments because this will irreparably damage the host's genome and kill him.

Any of the following mutations may be gained using Augmenters: *aberrant form (any)*, *chameleon epidermis*, *increased balance*, *increased physical attribute*, *increased sense*, *natural armor*, *night vision*, *quickness*, *regenerative capability*, *thermal vision*, *ultraviolet vision*, *unique sense*.

Destroyers

Strength: +5; Incubation: See description

These nanites come in both forms, distinguished by their respective targets. The more common robotic Destroyers were designed to break down equipment, quickly rendering items useless. The second, far more dangerous type was designed to attack organic material, dissolving it into base components. Both types could be delivered with hollow rounds of ammunition, bombs, or even just tossed at a target using a breakable container. The nanites were always programmed not to destroy their container but had free reign once released.

Programmer Model and Strength Table

Programmer Type	Model Strength				
	Mark 1	Mark 2	Mark 3	Mark 4	Mark 5
Civilian	+1	+2	+3	+4	+5
Military or Government	+2	+4	+6	+8	+10
Industrial or Corporate	+1	+3	+5	+7	+9

Maximum Number of Programs Table

Programmer Type	Model				
	Mark 1	Mark 2	Mark 3	Mark 4	Mark 5
Civilian	1	1d2	1d3	1d3+1	1d6
Military or Government	1	1d3	1d4	1d6+1	1d6+2
Industrial or Corporate	1d2	1d3+1	1d4	2d3	1d6+3

After being activated, robotic Destroyers begin disassembling any non-organic item within a 5' radius. Each round, items are allowed to save versus death (using the wielder's save) to avoid damage. If the item can save five times, the nanites are neutralized. However, each time the item fails a save, the nanites cause 1 condition level of damage and subsequent saving throws are made with a cumulative -1 penalty. Once the item reaches condition level 0, the nanites shut down.

Organic Destroyer nanites attack flesh and start out small, causing only 1d6 points of damage. The damage increases by 1d6 per round as the nanites use the organic material to multiply. This reaches a maximum of 10d6 at the end of 10 rounds, and continues at this level until the victim dies.

Though it seems dire, it is possible to survive an organic Destroyer attack. The first way is to save versus death during the initial round, preventing the nanites from gaining a foothold on the target's body. The second requires the target to save versus death each round the nanites are attacking, with a cumulative -1 to the saving throw. With a successful saving throw the nanites go inert and stop causing damage.

There is a final, desperate option, which might also work against robotic nanites melting your gear. This involves hitting the victim with a significant electrical jolt or an EMP and hoping for the best. But before trying this, note the EMP will only work against the robotic strain and electricity will likely damage the target.

Oxycarriers

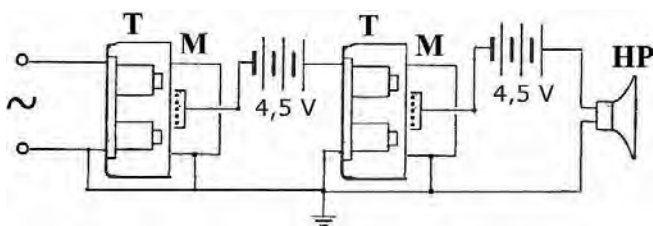
Strength: +1; Incubation: 1d6 hours

These nanites come in both types, and are often used by those working in hazardous atmospheres: underwater, in vacuum, or in areas where the air might be cut off or become toxic (such as in a fire or mine collapse). As their name indicates, the nanites carry oxygen, keeping it inert within the user's bloodstream and muscles, releasing it when needed. This increases the length of time a host can hold his breath to a number of minutes equal to his Constitution score.

Purgers

Strength: +1; Incubation: 2d4 hours

These nanites can completely rid a body of any toxin, rendering the host effectively immune to poisons and chemicals, no matter how they are introduced (weapons, ingestion, etc.). Purgers come as both robot and organic types, and will stay in the host body until destroyed or removed. MLs should note, Purgers are not effective against harmful nanites, only poisons and toxins.



NEW DRUGS

Immuno-Suppressor

The Ancients used this drug to allow recently injected organic nanites time to infiltrate a host's body. After taking the drug, the host's immune system shuts down for one hour. During this time she will automatically fail any saving throw versus disease. Once the hour is up, the drug stops working and the host can make saving throws again.

Purge

Although included here as a drug, Purge is not actually a chemical compound. It is actually a type of powerful organic nanite programmed solely to hunt and destroy nanite swarms within a host. Given it is considered Strength 10 when dealing with other nanites, Purge rarely fails to fulfill its mission.

Once injected, the drug activates quickly and begins to work in two different ways. First, Purge attacks any active swarms. If there are more than one, the drug starts with the strongest and works its way to the weakest, eliminating each in turn until it, or the other swarm, is destroyed. Every combat weakens the drug, reducing the Purge swarm's Strength by half the vanquished swarm's Strength (rounding down). For example, eradicating a Strength 4 nanite swarm would decrease the Purge swarm's Strength from 10 to 8. If it later defeats a Strength 3 swarm, the Purge's Strength will be further reduced from 8 to 7.

Having destroyed the active swarms, the Purge nanites move on to phase two, attacking any incubating swarms. This also weakens the drug, just as with active swarms. Once all other swarms are eliminated, Purge remains active for 1d6+(remaining Strength) days, and will continue to attack any nanites introduced to the host during this period. After this, the Purge will die and the host's immune system will dispose of the dead organic residue.

Although, typically, only a single dose of Purge is used at a time, an additional one can be administered, restoring the swarm's Strength to 10. This is usually done if the first Purge dose is severely weakened combating multiple swarms.

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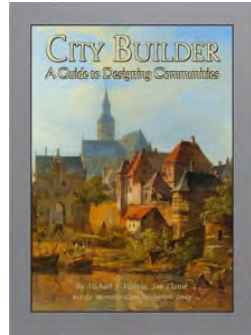
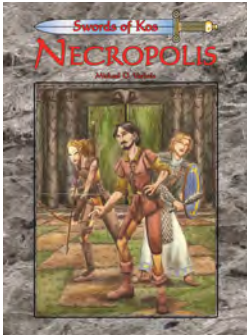
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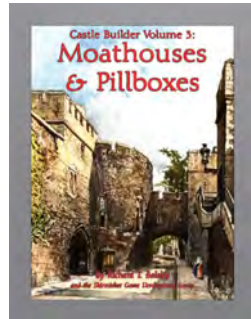
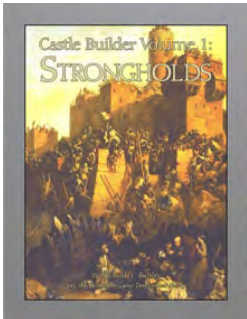
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