

TRAVELLER



*Special Supplement 1:
Biotech Vehicles*

TRAVELLER

BIOTECH VEHICLES

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BIOTECH VEHICLES

Science fiction is full of biotech vehicles, from the whale subs of East of Eden to the living ships of Vorlons and Shadows in TV's Babylon 5. 2300AD for Mongoose Traveller also features the heavy use of biotechnology by the alien Pentapod race, including vehicles and starships.

Since the Traveller vehicle design rules found in Supplement 5-6: Vehicle Handbook are effects-based, they can be used to design biotech vehicles in addition to standard 'hard' vehicles.

Base Cost

The Base Cost of biotech vehicles is double the price of their hard-tech counterparts, but they gain a +1 bonus to their Agility. While they are organic constructs, for game purposes they are treated largely like other vehicles.

Chassis Types

Walker, Tracked Ground (crawler), Balloons, Helicopters (ornithopters), Airships, Aircraft, Jet Aircraft, Boats, Ships, and Submarines can all be biotech vehicles. Battledress and powered armour can also be produced using biotechnology.

Structure Type

In addition to Chassis Type, biotech vehicles also have Structure Type, either vertebrates or invertebrates. Vertebrates rely on an internal skeleton for support, while invertebrates usually rely on muscles and internal hydraulic pressure to support their bodies. Vertebrates are the default Structure Type, and receive no benefits or penalties. Invertebrates subtract -1 from Hull and Structure before calculating Hits and Hits-to-Kill, and reduce their Base Cost by 25%.

Metabolic Type

In addition to the Chassis and Structure Type, biotech vehicles also have other descriptors. First, biotech vehicles are either Exothermic (warm-blooded) or Endothermic (cold-blooded). This choice has effects on Stealth, Thermal Masking, and performance.

Endothermic vehicles increase their Range by 25%, decrease Top Speed by 25%, and remove the penalty to thermal masking that biotech vehicles have.

Exothermic vehicles are the default metabolic type, and so have no modifiers.

Environmental Limitations

Biotech vehicles are more limited in the range of environments they can withstand. The three physical components of the UWP have to be the same. For every one digit difference in each and

every UWP number, the biotech vehicle suffers a -1 penalty to Agility, -25% Top Speed and -25% Range. A biotech vehicle can be made Multi-environment, and this can be taken three times. Each time Multi-environment is taken, the penalties are reduced by one level. Each level of Multi-Environment costs 100% of the Base Cost of the vehicle. In practical terms, this enables a biotech vehicle to operate on worlds with different UWPs. Multi-environment/1 allows the physical UWPs to be different by 1 in any direction, while Multi-environment/2 allows a difference of 2, and Multi-environment/3 allows a difference of 3.

For example, the 'Archie' airship was designed for the world of Ki Yuma, with a UWP of B878554-A.. On Dagon, with a UWP of C769445-B, the 'Archie' would suffer a -3 penalty to Agility, -75% to Top Speed, and -75% to Range. Note that each physical characteristic of Dagon is one digit off from Ki Yuma, which gives a -3 penalty to Agility, Top Speed, and Range.

However, if the 'Archie' has Multi-environment/1, this negates all penalties between Ki Yuma and Dagon.

Fuel, Food, and Range

All biotech vehicles have half the Range of their hard tech counterparts, before taking into account modifiers for metabolism. This represents how far they can travel before needing to refuel; in most cases, this means eating. Biotech vehicles require the proper balance of sugars and amino acids for sustenance. Any missing amino acids or vitamins can usually be added as supplements, or in some cases, manufactured by the vehicle.

A vehicle needs to eat an amount of food equal to its Structure rating x 50 kg. AFV-types need to eat an amount equal to Structure x 100 kg. If purchased, this food will cost CR. 2 per kg.

Vehicles can get their required food in a variety of ways. Food concentrate is the most common, and reduces the vehicle's food requirement by 50%, filling up on food concentrate in minutes.

Beyond food concentrates, biotech vehicles get their energy from one of four methods; being a carnivore, herbivore, omnivore, or photovore.

A vehicle designed as carnivorous can get its energy from the required amount of meat. With few exceptions, the vehicles themselves are not capable of hunting, and so their crew must hunt for them. Carnivores subtract 25% from the Base Cost.

Herbivores graze or forage for food and require twice the normal amount of food. Most herbivorous vehicles can get food on their

own, and require a number of hours equal to the amount of food they require, in kilograms, divided by 100. Herbivores have no change in the Base Cost.

Omnivores can use just about anything as food, and require the normal amount. An omnivore costs 150% of the Base Cost.

Photovores are photosynthetic creatures, deriving most or all of their energy from sunlight. While they require no food, they also have less available energy. Photovores move at 50% of their Chassis Type Top Speed. On the plus side, however, the photovores Range changes to unlimited during local daylight.

Hull and Structure

Biotech vehicles handle damage differently from conventional vehicles. Biotech vehicles have Hits, which are equal to 10 x their Hull score. Once they take damage equal to their Hits, they are rendered non-functional, though not yet dead. They can take an additional amount of damage equal to their Structure x 5 before they are killed. This is their Hits-to-Kill score.

Healing

Biotech vehicles can heal damage at the rate of 1 point per day without any intervention. With proper care (no travel and average medic check), this healing rate can go to 5 points per day. Biotech vehicles can also regenerate damaged systems at a rate of 1 system every two days.

Vehicle Size and Mass

Biotech vehicles tend to be bulkier than their non-organic counterparts, but also lighter. When calculating shipping sizes for biotech vehicles, add 25% to their number of Spaces for purposes of this calculation only.

When determining mass, reduce the amount by 10%, or 20% for invertebrate vehicles.

Biotech Vehicle Intelligence

Most biotech vehicles are effectively unaware and need guidance from a controller. However, they can be designed with rudimentary animal intelligence, or even be made fully self-aware, though this is rare.

Primitive controls are normal for biotech vehicles, and denote a construct with 0 Int. Standard controls are equivalent in an Int characteristic of 1, while Advanced controls are equivalent to an Int of 2.

Adding an Autopilot gives a +1 bonus to Int for each level of Autopilot, to a maximum of +2.

Biotech vehicles can install organic cores, like standard vehicles, to become truly self-aware.

Universal Modifications

Biotech vehicles can use any of the Universal Modifications found in the core rules. Be aware that the Base Cost of any chassis starts out doubled, as shown above. Unless otherwise mentioned, all Universal Modifications are available.

Increased Structure

This will increase the number of Hits-to-Kill for the vehicle.

Decreased Structure

This will decrease the number of Hits-to-Kill for the vehicle.

Increased Hull

This will increase a biotech vehicle's Hits.

Decreased Hull

This will decrease a biotech vehicle's Hits.

Universal Control Modifications

Along with the control types mentioned above, the following Control Modifications are available.



Exo-skeleton Linkage (TL 10)

This is a neuro-muscular suit that mimics the wearer's actions. Some cultures will use this as a sort of cyborg connection to a mechanical craft, whereupon it adds a +2 bonus to the vehicle's Agility. In a biological vehicle, it adds a +1 bonus to Agility.

Neural Link (TL 12)

This nervous system to nervous system link is more responsive than an equivalent hard-tech version, and adds +3 to Agility of the vehicle.

Autopilot

Autopilots on biotech vehicle represent a basic animal intelligence that can keep the vehicle going in more-or-less a straight line, avoiding any obstacles. They can also be programmed to return to a fixed geographical location. Biotech autopilots have a skill of 1 in their appropriate vehicle type.

Additional Drive System Modifications

The following Drive Systems are available for biotech vehicles.

Wind Power

Biotech vehicles can use sails or extendable membranes for locomotion.

Grav Drive

Biotech vehicles can have a hard-tech grav module added, either to give them flight or to improve their flight capability. This makes them a type of cyborg.

A vehicle with Grav Drive has the same movement as an equivalent Grav Vehicle (Light or Heavy) of the same TL. There is a -1 penalty to Agility, and Range in Grav Drive mode is half that of an equivalent grav vehicle.

Armour and Defensive Modifications

The following Armour and Defensive Modifications are available for biotech vehicles.

Biotech Armour

Biotech armour can be very tough, especially at high Tech Levels. As a general rule, however, it is not as tough as hard tech armours of the same Tech Level.

Maximum biotech armour is equal to TL x 4, rather than TL x 5.

Armoured Fighting Vehicle

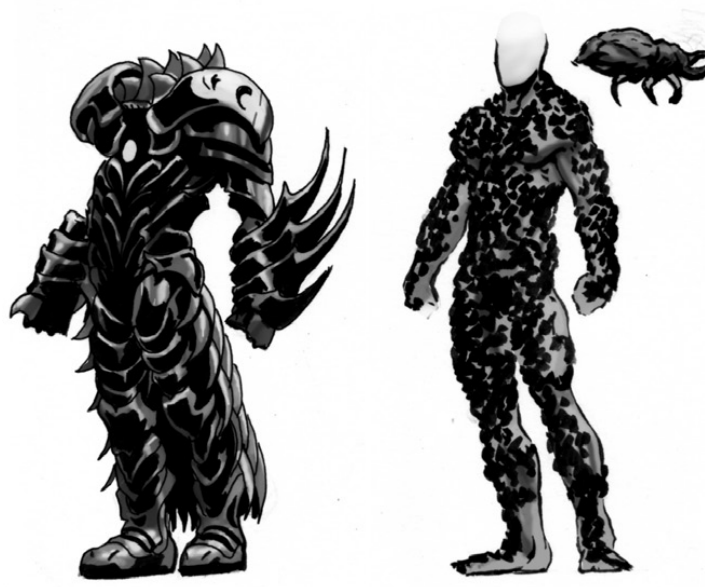
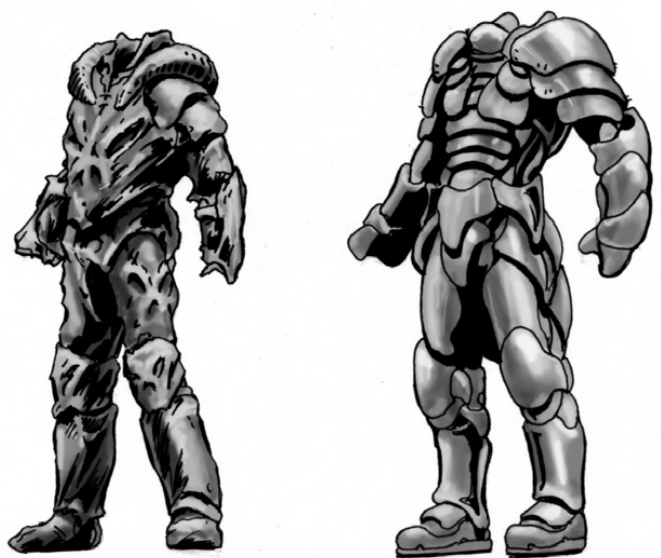
Biotech vehicles can be armoured fighting vehicles. Maximum armour as an AFV is TL x 8, rather than TL X 10

Active Armour

A biotech vehicle with an Int rating of 2 or higher can have Active Armour. Active Armour attempts to predict where a missile or kinetic weapon will impact, and works to reinforce that area. This reduces protection in all other areas, however. If using the

Biotech Armour Examples

Tech Level	Base Armour Rating	Hard-tech Material	Biotech Material
0-2	0	Wood	Chitin
3-5	1	Iron	Hardened Chitin
6-8	2	Steel	Reinforced chitin
9-11	3	Crystaliron Steel	Spun-silk carapace
12-14	4	Superdense	
15-17	5	Bonded Superdense	Diamondoid chitin
18+	6	Coherent Superdense	Quantum filament



Armour Placement rules, on a roll of 8+, one Armour Location can be increased by 50%, while all other areas are reduced by 50% for that combat round only. If not using the Armour Location rules, then Active Armour will increase the vehicle's Armour by 50% against one attack only, and reduce it by 50% versus all other attacks.

Active Armour can normally only be used against missiles, rockets, and kinetic weapons. It can also be used against high-energy weapons, with a -2 DM to the roll. It cannot be used at all to protect from laser, particle-beam, or meson strikes.

Electrostatic Armour (TL 9)

Biotech vehicles can use a modified form of Electrostatic Armour. The biotech system works just like the hard-tech version, but can only protect against up to 5 attacks before it must recharge. Recharging takes 1 hour per attack from TL9-12, and 20 minutes per attack thereafter.

Anti-missile Systems

Biotech anti-missile systems take a different approach than hard-tech systems, which typically try to destroy the weapon before impact. Biotech defenses concentrate on making the weapons detonate before impact, a subtle difference, but important to their approach.

Filament Web (TL 10)

The web is an electrically-charged net that surrounds the vehicle. It can only be used when the vehicle is travelling at speeds of up to 50 km/h. When an explosive weapon contacts the web, the electrical charge will fire the weapon's fuse, causing it to explode prematurely, destroying the web.

The filament web costs Cr. 5,000 per Hull number of the vehicle, and consumes 4 Spaces.

Filament Web

Incoming Weapon TL	Detonation Roll (2D)
6-7	6+
8-9	7+
10-11	8+
12-13	9+
14+	10+

TL 12 Filament Webs get a +1 DM to the Detonation Roll.
TL 14 Filament Webs get a +2 DM to the Detonation Roll.

Decoy Systems

Biotech decoy systems take up half a Space and have four uses. They can regenerate another use every 2 hours. The normal decoys from Supplement 5-6: Vehicle Handbook are available.

Environmental Modifications

Biotech life support systems are half the price of the hard-tech versions, twice the duration, and use one less Space, with a minimum of ½ a Space used.

Biotech life support systems are applied to the entire vehicle, rather than just the habitable space. Use the total number of Spaces in the vehicle to determine the cost of the system, rather than number of crew.

As an example, the biotech version of Short Term Life Support has a duration of two days, with a maximum duration of eight days. It requires a ½ Space for up to 20 Spaces, and 1 Space for 20-40. Cost is Cr. 2,500 for up to 20 Spaces, and Cr. 5,000 for up to 40.

Electronic/Cognitive Modifications

Most biotech vehicles do not have electronic components. However, they will have biotech options that mimic certain functions. As a general rule, biotech navigation is superior to hard-tech varieties, while sensors, save for Neural Activity Sensors and psychic sensors, are worse.

Computers

Computers use the rules from page 92 of the Traveller Core Rulebook. Biotech vehicles can have computers added, typically as an after-market modification, at four times the cost of computers in the Traveller Core Rulebook.

Navigation

Biotech navigation equipment adds a +1 DM at all Tech Levels, and is half the price of hard-tech navigation.



Communications

Biotech communicators are double the size and cost of hard-tech comm systems.

Meson Communicators (TL 10)

These do not have a biotech equivalent.

Electronic Countermeasures

Biotech vehicles do not have electronic countermeasures available, aside from using hard-tech options.

Sensors

Biotech vehicles tend to have poor sensors, relying on a combination of visual, near ultraviolet, and infrared, combined with acoustic and olfactory sensors. They do not have the range or accuracy of hard-tech systems.

All sensors cost twice as much, take up double the Spaces, and have a base range of one range band less.

Underwater Sensors

Unlike conventional sensors, underwater biotech sensors are superior to the hard-tech versions.

Underwater Sensors

	Bonus	Space	Range	Cost (Cr)
Basic	+1	½	Long	2,000
Standard	+2	1	Very Long	5,000
Advanced	+3	1 1/2	Distant	10,000

The base Tech Level for biotech underwater sensors is 4, and they have the same modifications as standard sensors.

Stealth Modifications

Stealth is the science of rendering a vehicle undetectable to sensors. All biotech vehicles get a -1 Stealth bonus, for free. This stacks with the standard Stealth Class bonuses from Supplement 5-6: Vehicle Handbook.

Camouflage

Camouflage is distinct from stealth. Biotech vehicles are very good at visual camouflage, and poor at infrared masking. Biotech vehicles pay half for visual camouflage, and double for Infrared Masking

Accommodation Modifications

All of these modifications cost double the listed price from Supplement 5-6: Vehicle Handbook, and, when they use Spaces, use one extra Space.

Fresher (TL 7)

A biotech fresher can be highly disturbing to individuals foreign to the culture that built it. It tends to be more intimate than most cultures, and species, are comfortable with.

Additional Equipment and Tools

Like the Accommodation Modifications, the Additional Equipment and Tools cost double the list price from Supplement 5-6: Vehicle Handbook, and when they use Spaces, use one extra Space.

Biotech Weapons and Weapon Mounts

Weapon mounts and fire control for biotech vehicles use the same rules and pricing as hard-tech weapons.

Weapon	TL	Cost	Damage	Auto	Spaces	Range	Ammo /Space
Bombardier Cannon	10	Cr. 60,000	8D Super-AP	No	10	Distant	30
Arc Cannon	11	Cr. 120,000	10D Destructive	No	8	Long	N/A
Static Discharge Net	12	Cr. 80,000	9D	No	10	Medium	100
Sonic Screamer	11	Cr. 150,000	8D	No	14	Distant	200
Flame Spitter	11	Cr. 60,000	3D+6 Flame	No	12	Very Long	80
Spore Mortar	12	Cr. 20,000	5D (personal scale)	No	8	Distant	7
Monofilament Web	13	Cr. 250,000	8D Super-AP	No	7	Short	40
Swarm Cannon	12	Cr. 80,000	7D	12	4	Very Long	60
Biolaser Cannon	14	Cr. 1,200,000	8D Super AP	No	8	Medium	20

Fire control improvements typically represent improved intelligence and controls for the sub-systems operating the weapons.

Any hard-tech weapon can be added to a biotech vehicle for double the listed price.

Bombardier Cannon

This cannon uses a mixture of two highly-reactive chemicals to fire the round, typically a high explosive.

Arc Cannon

This is short-ranged electrical-discharge weapon, and has enough power for 5 shots. Against hard-tech vehicles it does +1D extra damage. It can recharge shots at the rate of 1 every five minutes.

Static Discharge Net

The net is a short-range weapons that drapes the target with a network of conductive threads, and then passes a high-powered electrical discharge through it. The discharge can disable other biotech vehicles on a 2D roll of 8+, with a duration equal to the Effect roll in minutes. It is less effective against hard-tech vehicles, disabling them on a 2D roll of 10+.

Sonic Screamer

The screamer is primarily designed to damage other biotech vehicles. It does half damage to conventional vehicles.

Flame Spitter

The flame spitter fires balls of incendiary material that ignite on contact with an oxygen atmosphere. Like napalm, these balls

stick when they hit a target. While not ineffective against sealed vehicles, they are destructive against any other vehicles, with the burning liquid finding its way through any cracks.

Spore Mortar

The spore mortar fires hard, nut-like rounds that crack open on striking the ground, releasing the load of spores inside. These spores cause damage to any carbon-based life-form that breathes them in. They have no effect on hard vehicles at all, but can cause 1D/3 points of damage to a biotech vehicle.

Mono-filament Web

Mono-filament Webs are more like traps or mines, set by a biotech vehicle in the hopes that another vehicle will run into them. The web resembles spider silk reinforced with carbon filament, and is extremely strong and sharp. The damage it causes depends on the speed of a vehicle when it hits, at 1D per 20 km/h of speed, to a maximum of 8D (160 km/h)

Swarm Cannon

The swarm cannon resembles a biological rotary cannon, firing a swarm of small insects with metallic shells at extremely high velocities. The swarm has the ability to correct their aim during flight, and so gain a +2 DM to hit at all ranges past Medium.

Biolaser Cannon

The biolaser is a chemical laser weapon. It uses enhanced bioluminescent protein as the lasing medium, energised by adenosine triphosphate (ATP) or an equivalent. Even the optical chamber and mirrors are biological in origin, though silver is fixed by the organism for use in the mirrors.

Example vehicle: Architeuthis Biotech Airship

Resembling nothing so much as a giant floating squid, the Archie, as it is often called, can hold up to five passengers and crew in the little gondola suspended below the vehicle. The gondola is biologically inert, except for the control linkages, for the comfort of human crews. Ten tentacles hang below the main body of the airship, behind the gondola, and can be used to carry up to 8 Spaces of cargo. Propulsion is through an array of flagella that propel the airship like dozens of little propellers. Lift is provided by hydrogen gas, produced by the organism itself, using photosynthetic patches on the top of the lift envelope. 'Archies' are not very bright, but are capable of forming loyalties and attachments to long-term crews.

Vehicle	TL	Skill	Agility	Speed	Range	Armour	Crew and Passengers	Cargo	Open?	Hits	Hits to Kill	Cost Cr.	Shipping Size
Archie	11	Airship	-2	120km/h	3750 km	3	4	10	No	20	15	416,500	9 tons

Biotech Vehicle: Invertebrate, Carnivore, Endothermic, Int 2
Base UWP: 766
Special Features: Standard Controls (Int +1) Basic Sensors 9 (Human-installed), Advanced Navigation (+2), TL 8 Commo (Human-installed), Autopilot (Int +1), Fresher, Mini-galley, 10 Manipulator Arms, Stealth/1
Envelope Size: (Size 8 world, Standard Density Atmosphere): 720 tons (7.2 tons deflated)
Envelope Hits-to-Kill: 45

