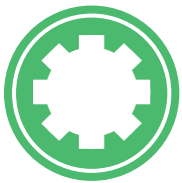
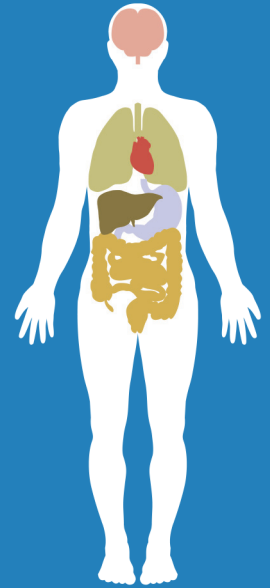


# biogears®

## Exploring Human Physiology

BioGears is an open source, extensible, general purpose human physiology engine.

Use BioGears to drive your immersive medical education and training technologies, assist your research program, and inform your medical training tools.



### Engine

Mathematical models for a wide range of physiology systems, medical interfaces, and substances lower the barrier to create medical training tools.



### Common Data Model

Standard inputs, outputs, units, and naming conventions make model additions and product integration quick and easy.



### Community

BioGearsEngine.com is a place for discussion and sharing among our community of users. Explore showcase scenarios, forums, and learn how to extend BioGears models.



### Documentation and Validation

Tutorials, code-based documentation, and scenario examples make BioGears easy to understand and use. Validation ensures accurate model output.

Download Today [BioGearsEngine.com](https://www.biogears.com)

# BioGears Engine Overview

The open source BioGears physiology engine is a whole body simulation comprised of accurate system-level models.

Use it to power your immersive training technologies and research by simulating realistic patient response to trauma and treatment.

## Systems



Cardiovascular system computes hemodynamics



Respiratory system computes pulmonary functions



Energy balance system computes temperature, exercise readiness, and nutrient usage



Substances system computes diffusion, gas exchange, and drug effects



Environment modifies ambient values and thermal properties



Renal and Gastrointestinal Systems compute nutrient consumption and clearance



Endocrine and nervous systems maintain homeostasis through feedback mechanisms

## Features



- Library of Drugs
- Drug Administration through multiple routes



- Electrocardiogram
- Anesthesia Machine



- CPR
- Pulmonary Function Test
- Complete Blood Count
- Urine Panel



- Chronic Conditions
- Insults & Interventions

## Substances

### Drugs

- PK Model
- PD Model

### Blood

- Hemoglobin
- Gases
- Ions

### Hormones

- Epinephrine
- Norepinephrine
- Insulin

### Nutrients

- Fat
- Sugars
- Protein

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