Understanding the Cancer Ecosystem

There are many similarities between nature's ecosystem (left page) and your body's ecosystem (right page). Think of a tumor like a weed, whose growth depends on many factors.

Temperature

Precipitation

Photosynthesis

Respiration

Decomposition

Weed

Energy
Plants obtain their energy from the sun, while tumors burn glucose and fats for energy.

Removal/Destruction
Predatory insects eat and may kill a growing plant, similar to how macrophages and other immune cells attack a growing tumor.

Competition
Other plants and animals compete with the weed for space and resources, just as normal cells compete with a tumor.

Microenvironment
The pH of the soil, like that of the tumor microenvironment, can affect growth.

Dispersal
Tumor cells continually break off from a primary tumor and spread to other locations, like plant seeds dispersed by wind.

Growth
Hormones from the endocrine system and messages from the nervous system provide growth signals for the tumor, in the same way that plant hormones trigger germination.

Immune cell

Nerve

Microbiome
Our digestive system contains microbes that help us digest nutrients, much the way fungi and other decomposers recycle nutrients in a forest.

Nutrients
Tumors get nutrients from blood vessels much like roots get nutrients from the soil.

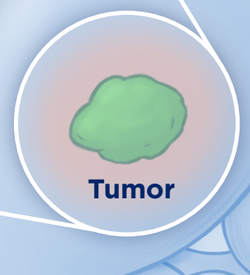
Nervous System

Endocrine System

Immune System

Circulatory System

Digestive System



Tumor