

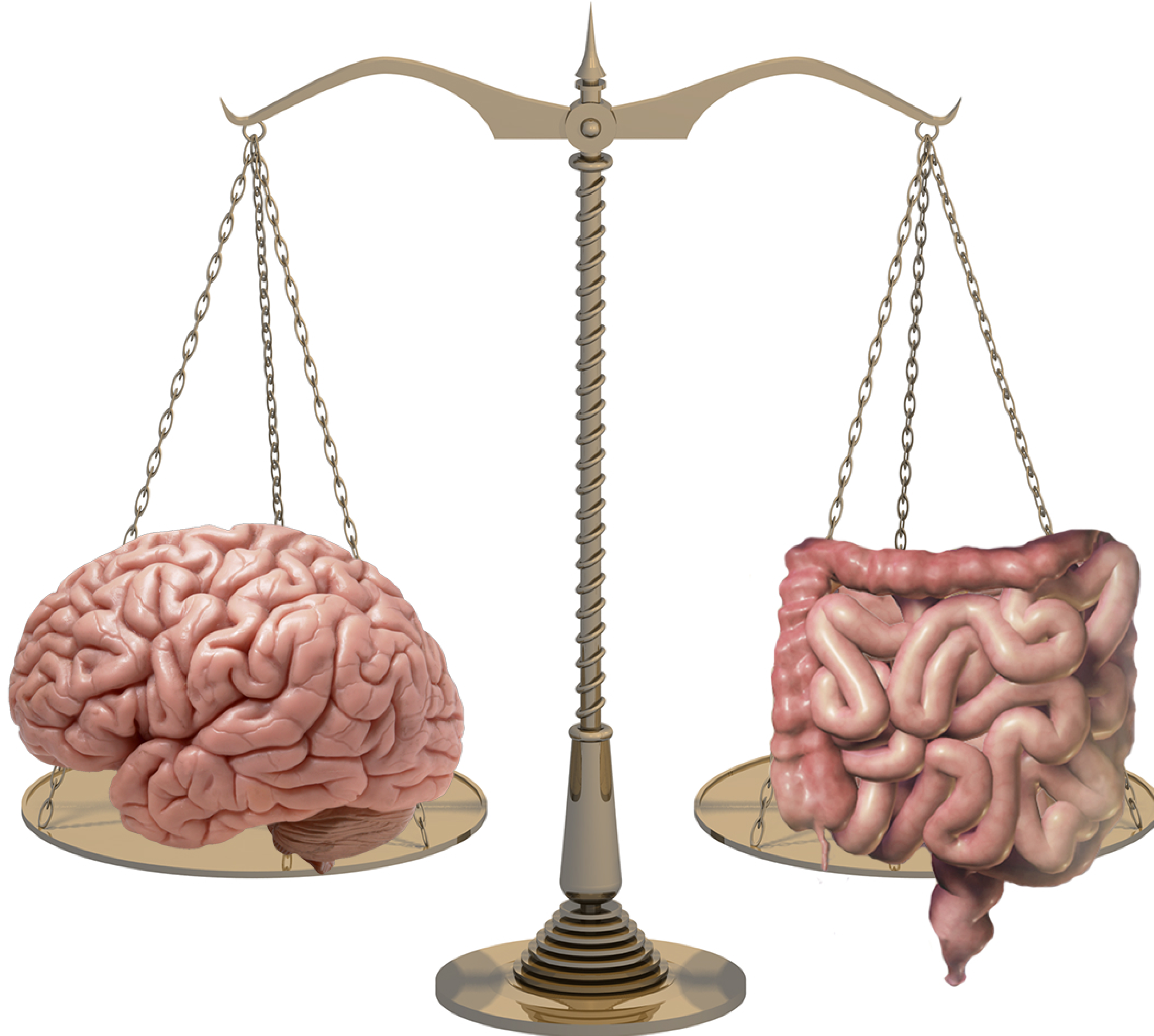
Towards a translational medicine pipeline based on the human microbiome

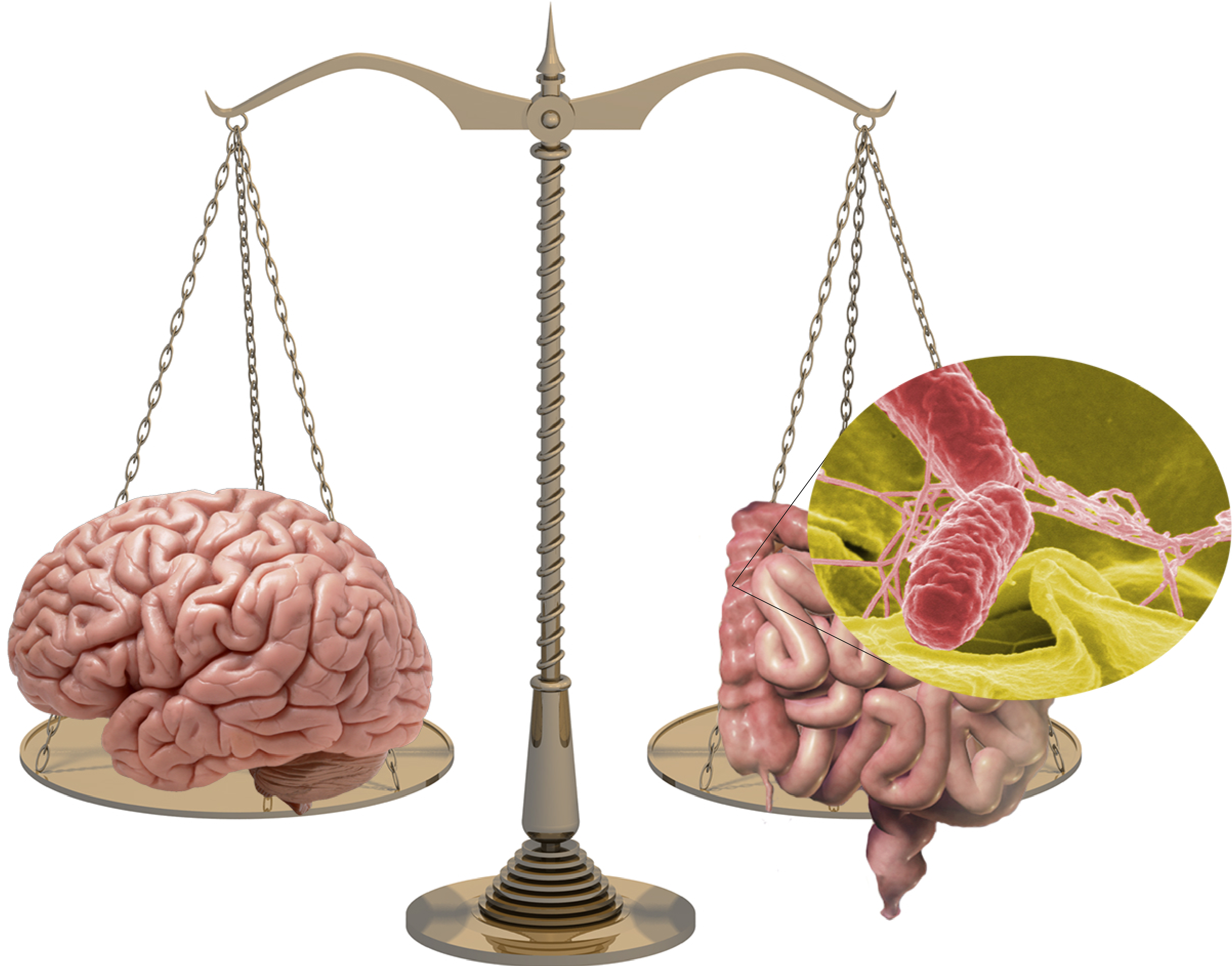
**Rob Knight, HHMI and BioFrontiers
Institute, University of Colorado at
Boulder**













**“We have basically wiped
out infection
in the United States.”**

Dr. William H. Stewart,
10th Surgeon General
of the United States

1965





READ THE LABEL

DO NOT USE WITH OTHER MEDICINES CONTAINING ACETAMINOPHEN

CONTAINING ACETAMINOPHEN

TYLENOL

EXTRA STRENGTH

Acetaminophen

100 CAPSULETS - 500 mg each



Quick relief of pain
children over 1 year of age

Directions
do not take more than
(see directions on box)

Adults and children
Take 2 capsules every 4 to 6 hours as needed.
do not take more than 6 capsules in 24 hours.
do not use for more than 10 days unless directed by a doctor.

Children under 12 years of age
In children, use only if directed by a doctor.
For the reason that the acetaminophen
cause liver damage.

Other information
Some brands of Tylenol
do not use Tylenol
except as directed
or unless
or unless

Questions & Answers
call 1-800-441-8851
1-800-441-8851





Russia

Canada

North
Pacific
Ocean

United States

Mexico

Venezuela
Colombia

Peru
Bolivia

Chile
Argentina

Indian
Ocean

South
Pacific
Ocean

Australia

New
Zealand

Indonesia

Papua New
Guinea

Thailand

India

Afghanistan

Iran

Iraq

Saudi Arabia

Ethiopia

Kenya

Tanzania

Madagascar

Mongolia

China

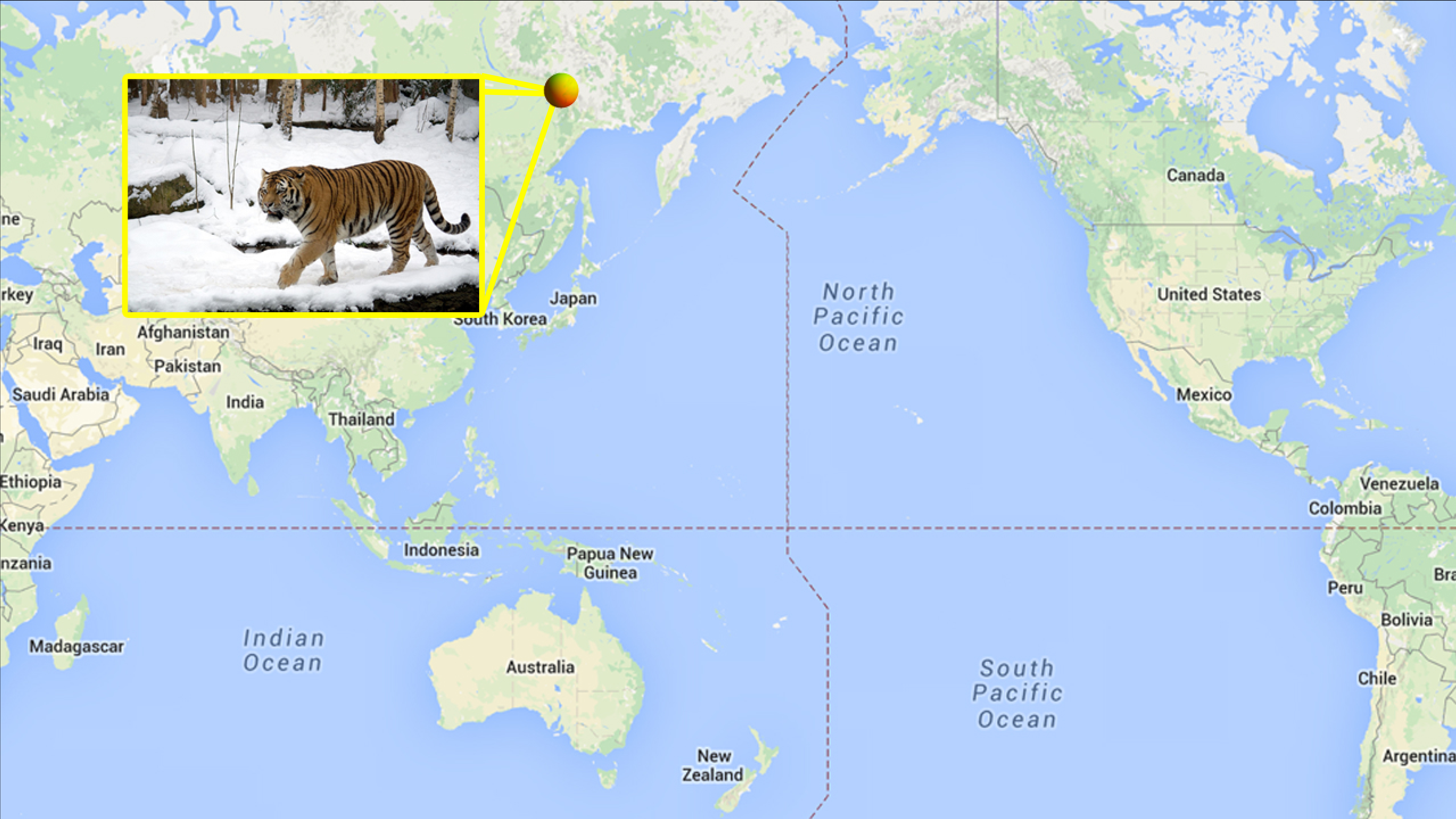
South Korea

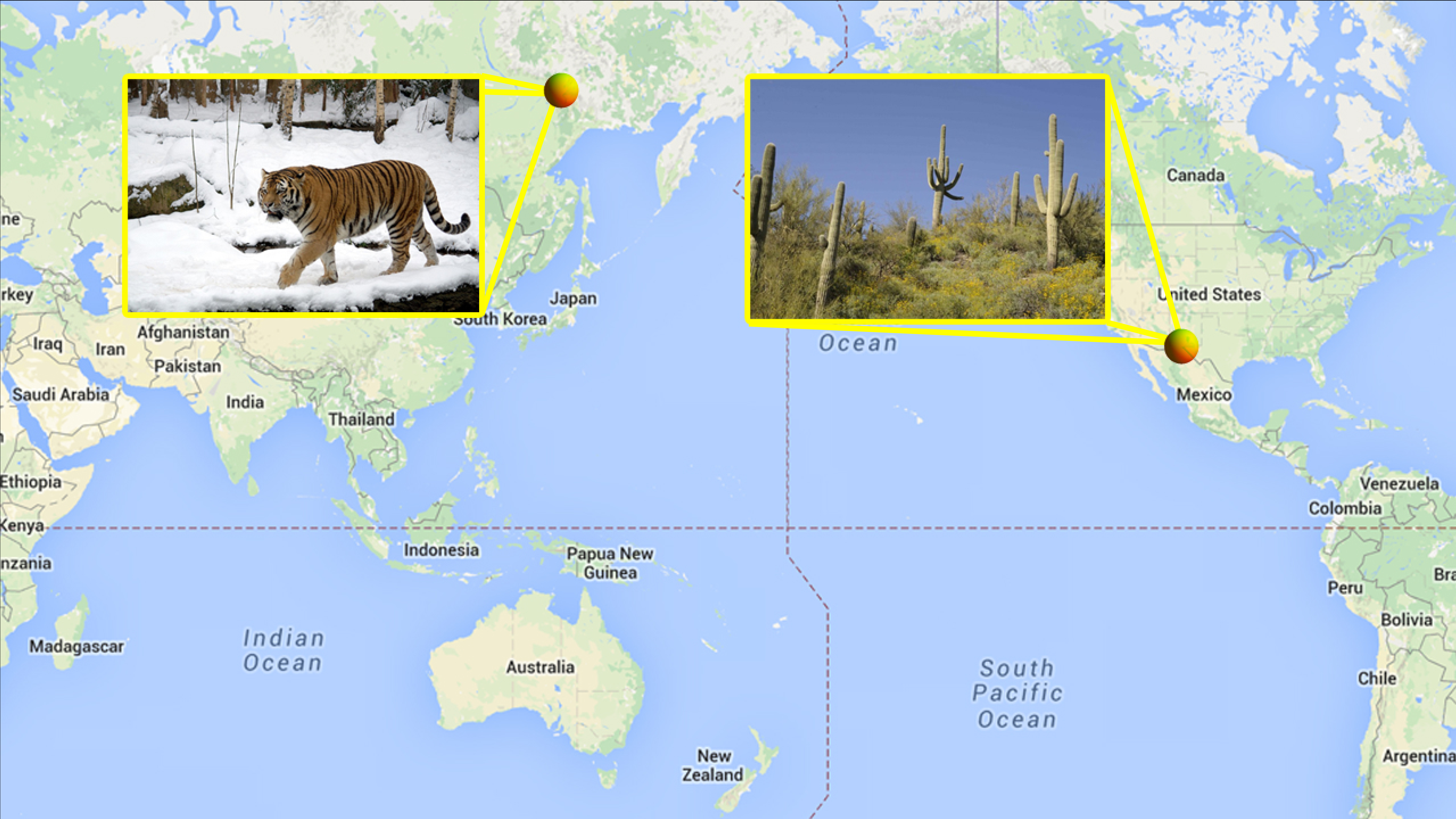
Japan

Kazakhstan

ne

rkey

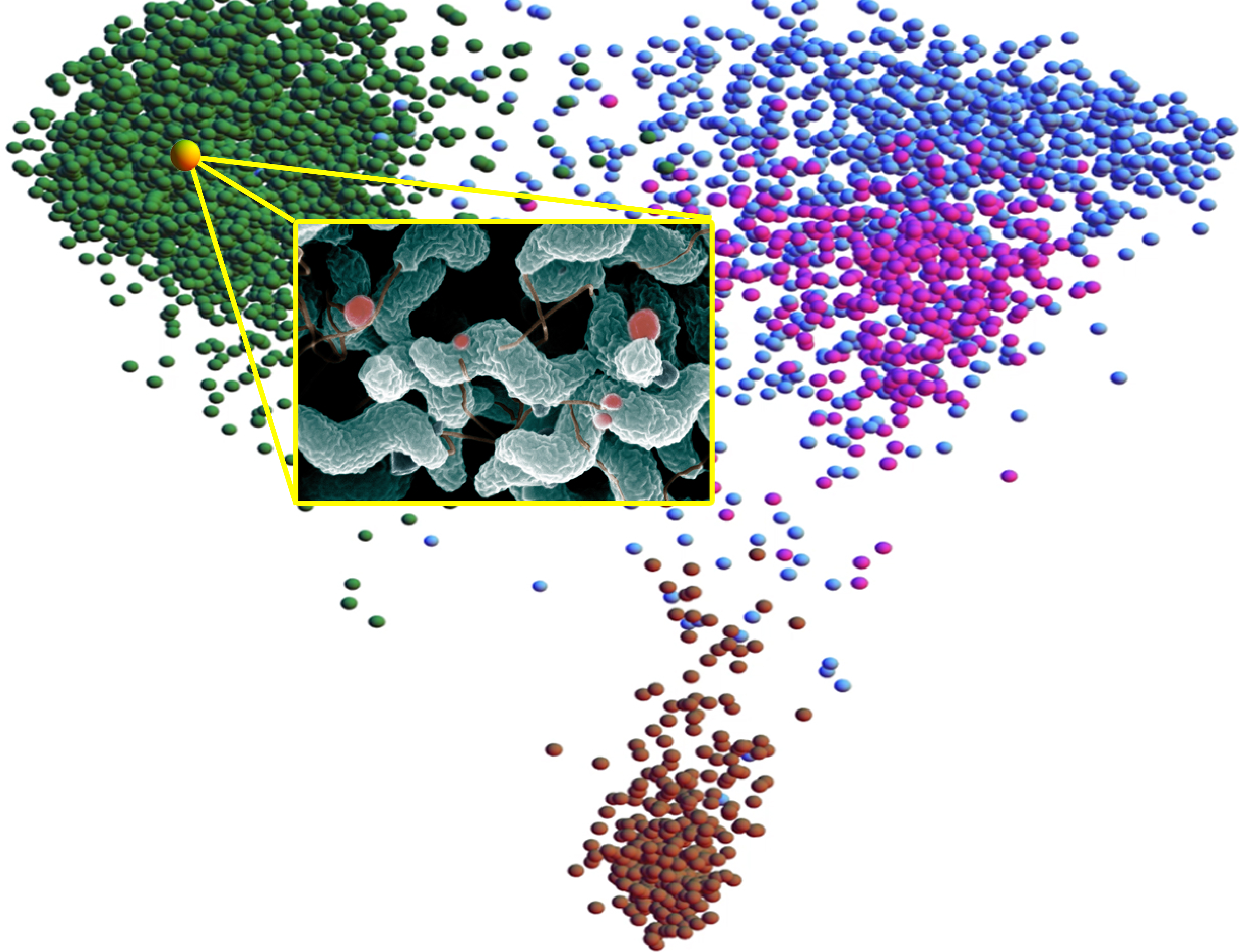






Genomic coordinates and sequence data for various samples, including sample IDs, coordinates, and sequence fragments. The text is partially obscured by a large watermark 'AAGC'.



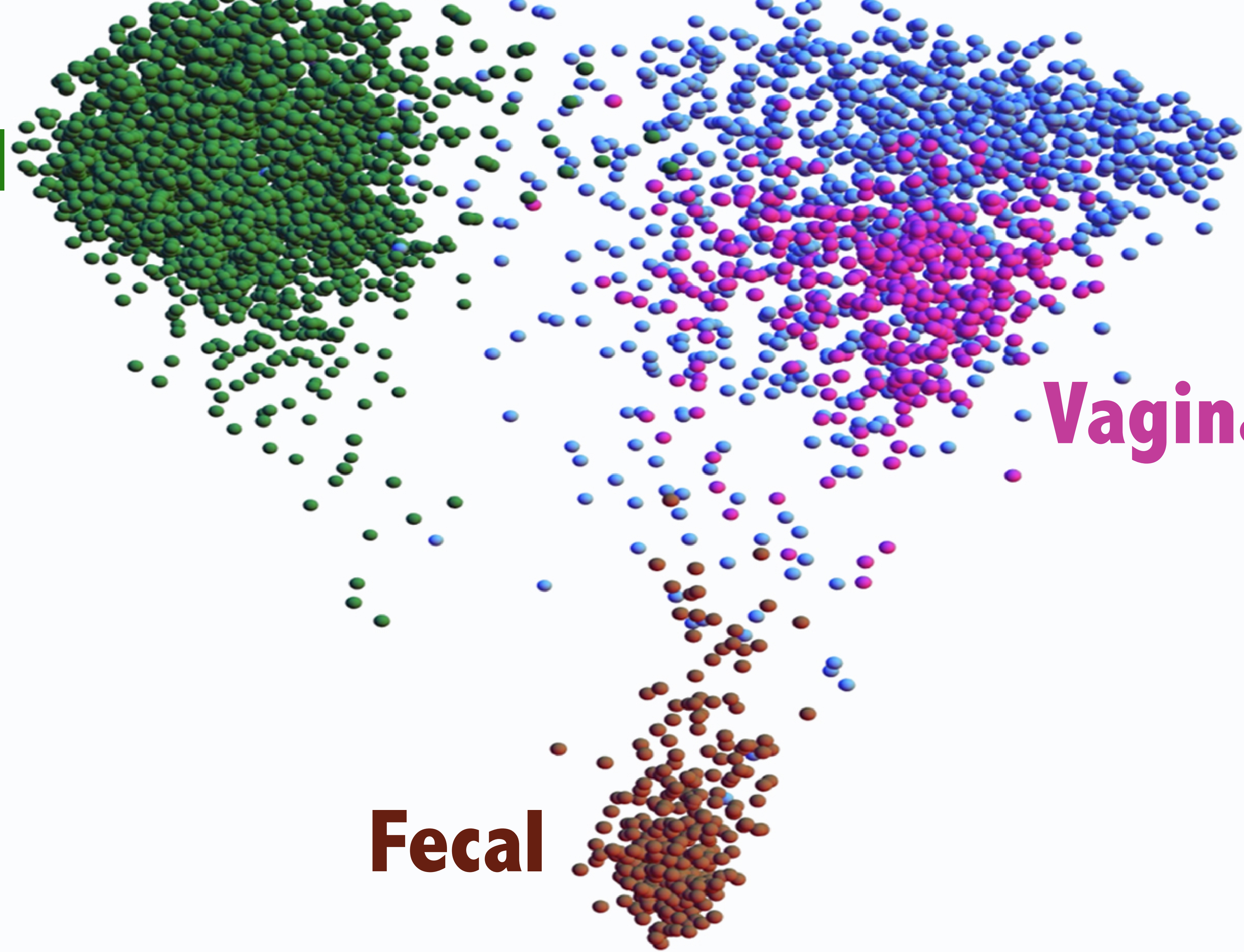


Oral

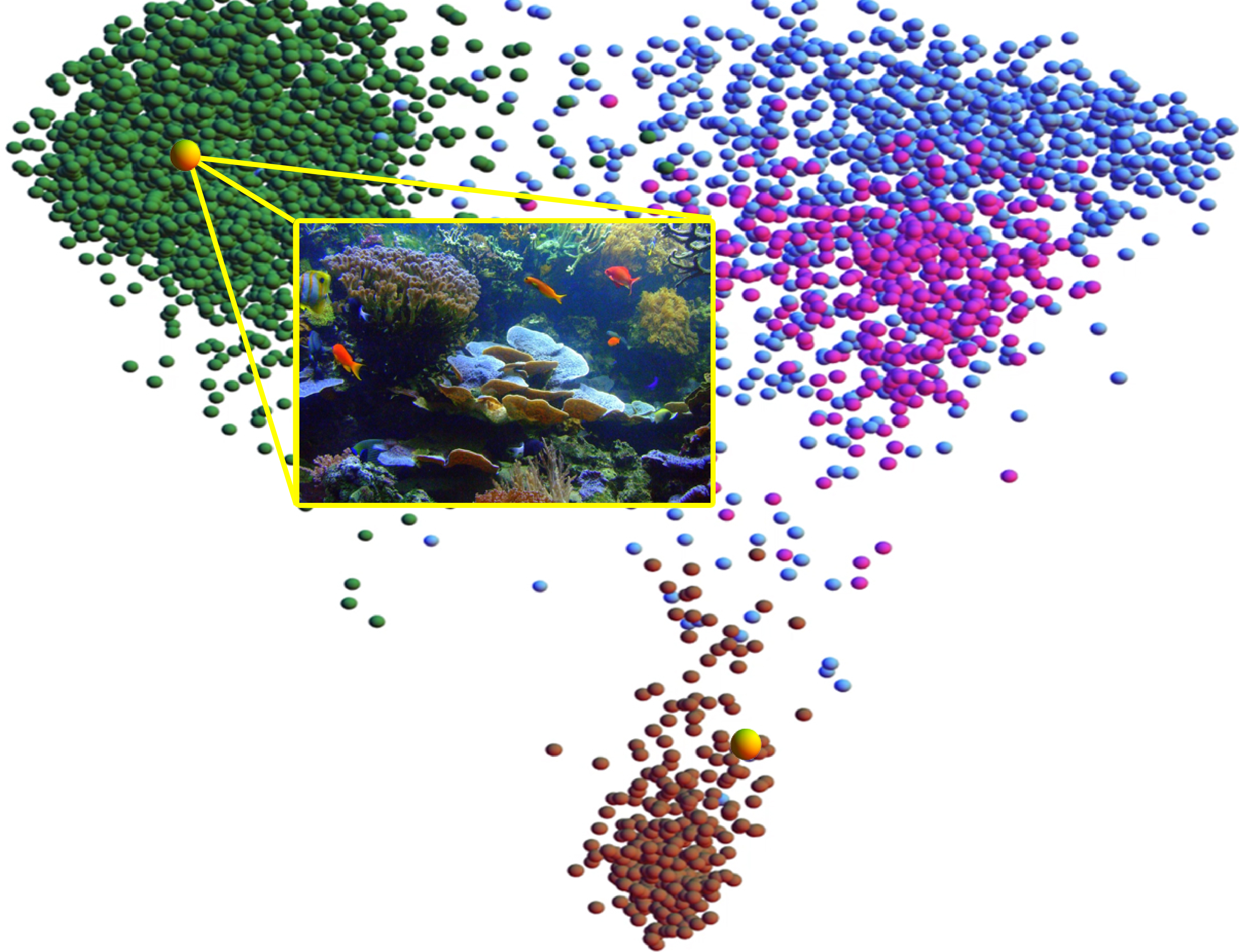
Skin

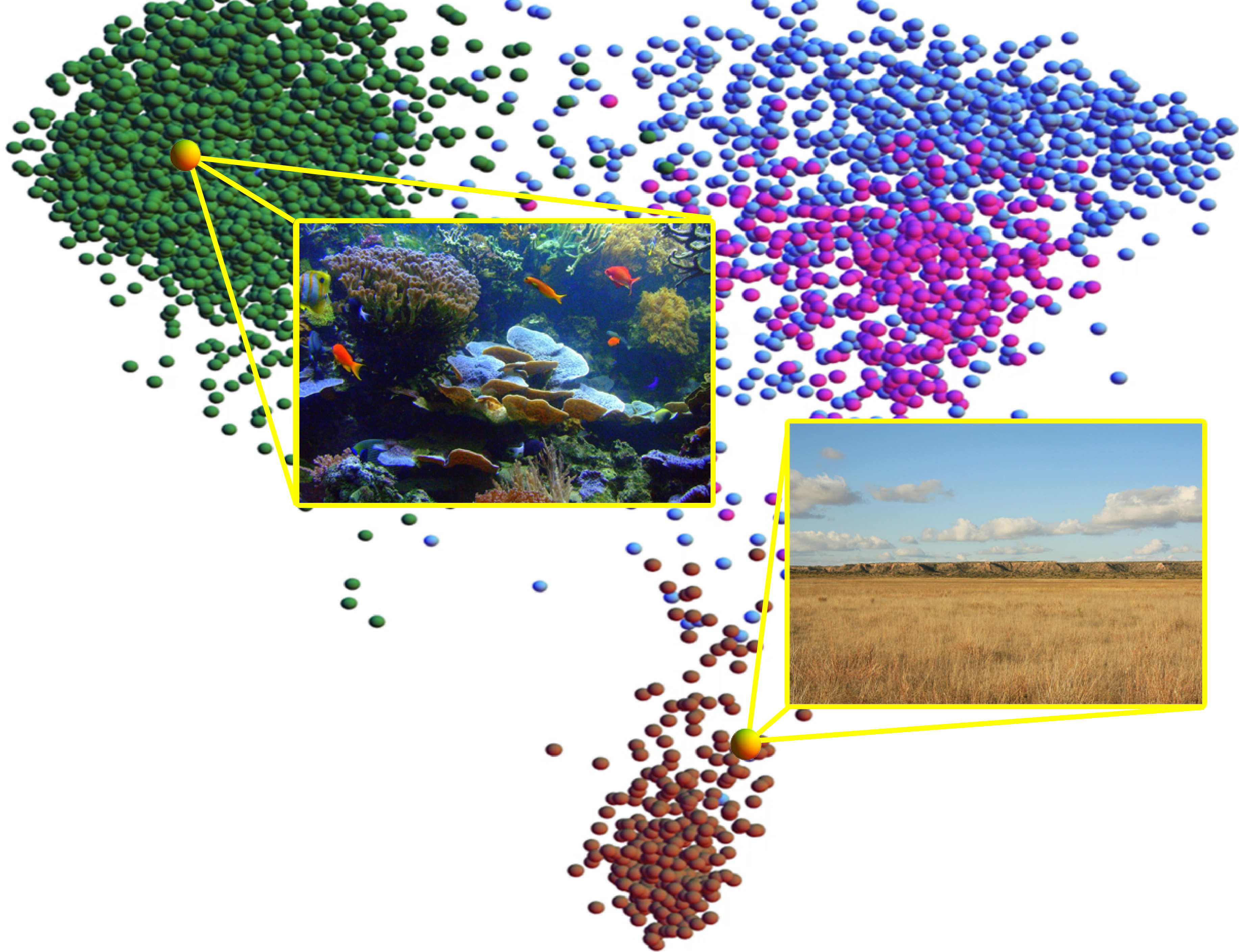
Vaginal

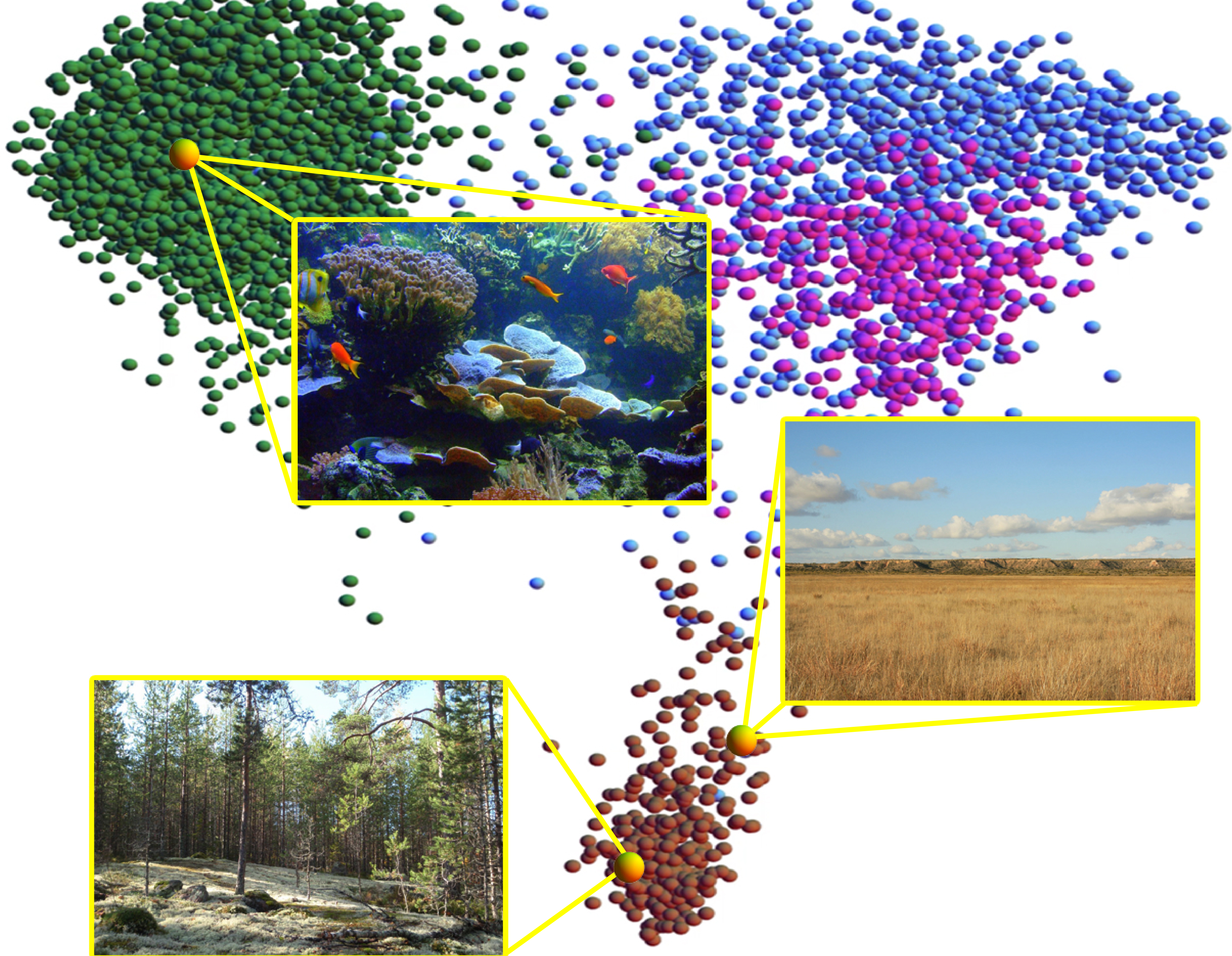
Fecal



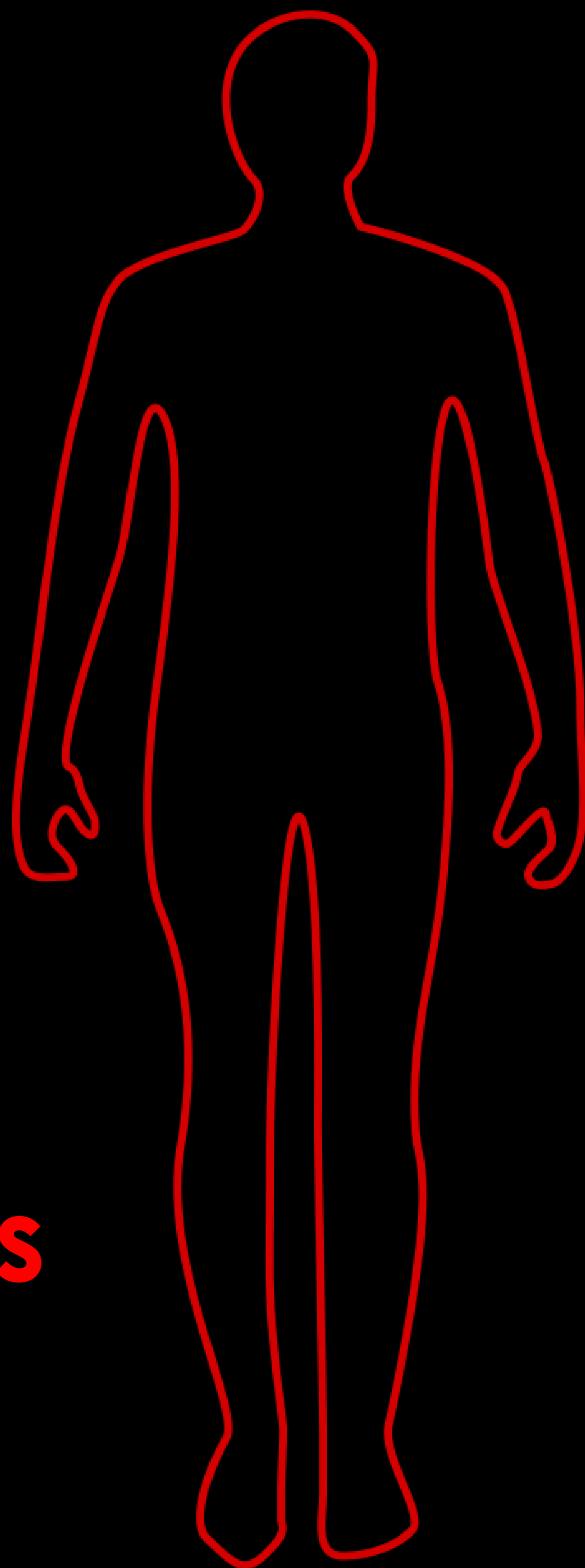


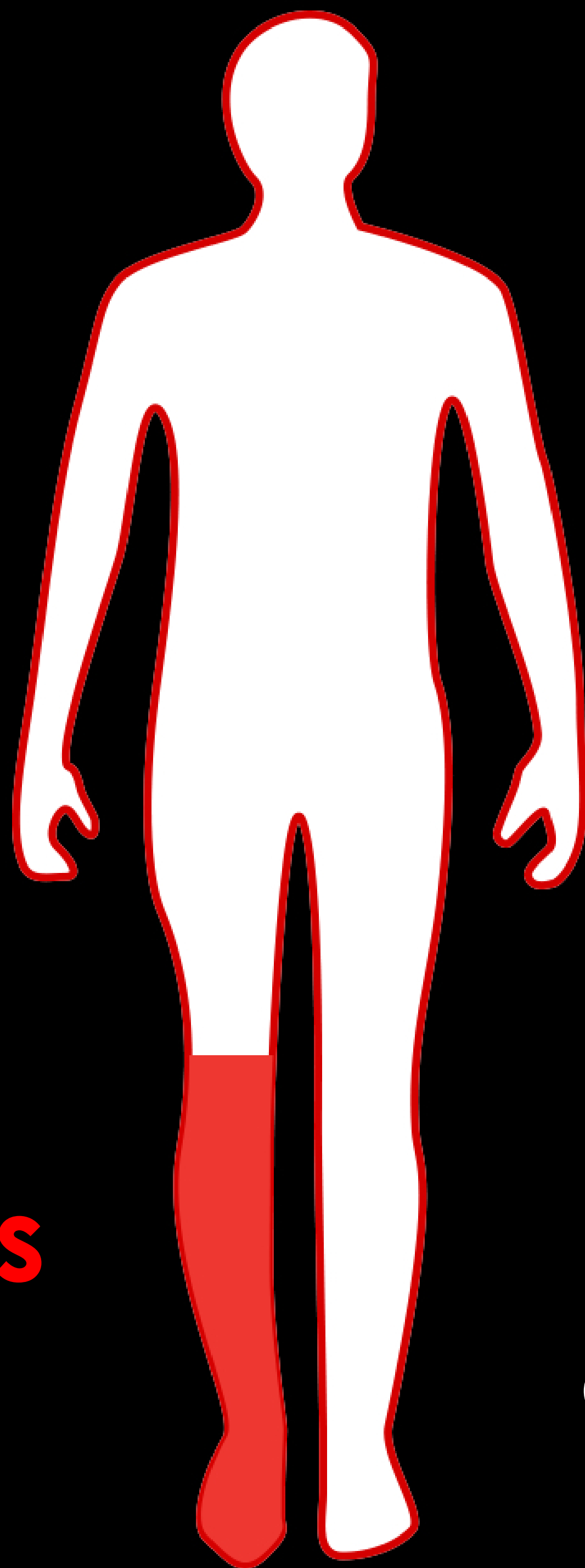






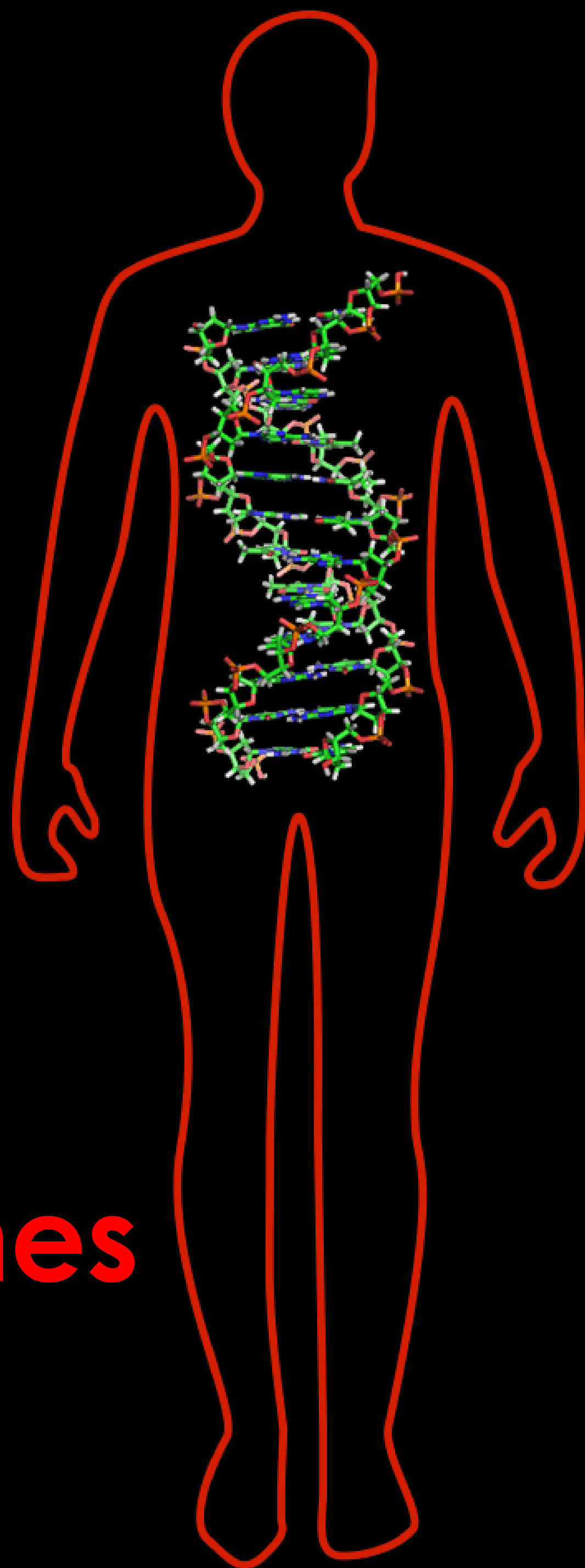
**10 trillion
human cells**



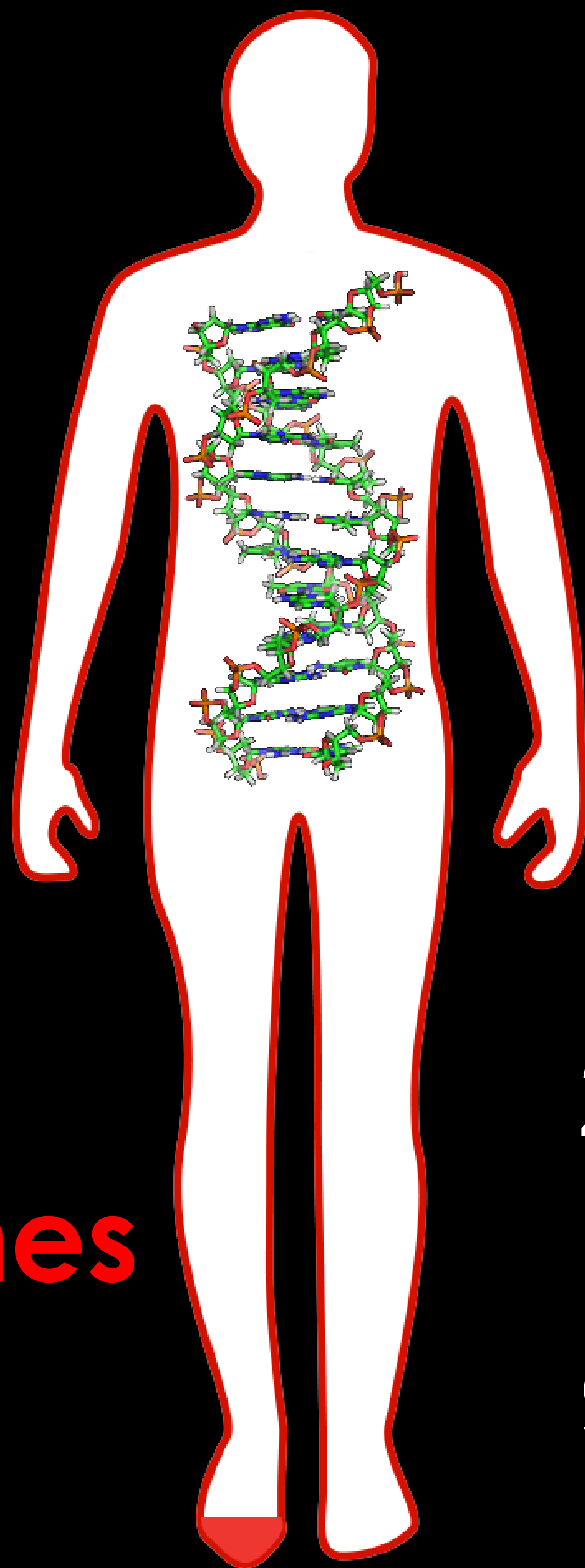


**10 trillion
human cells**

**100 trillion
microbial
cells**



**20,000
human genes**



**20,000
human genes**

**2-20 million
microbial
genes**

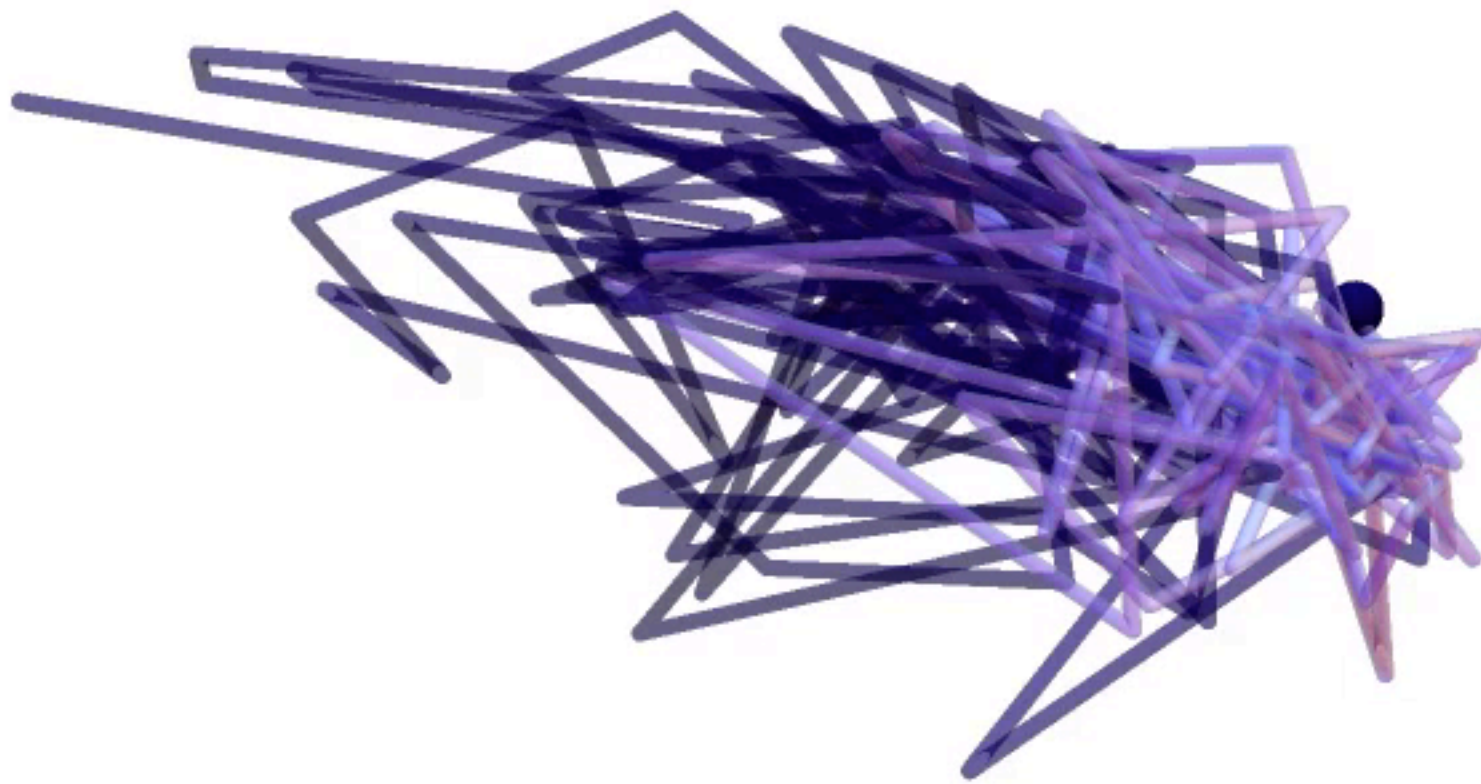
Oral



Skin

Vaginal

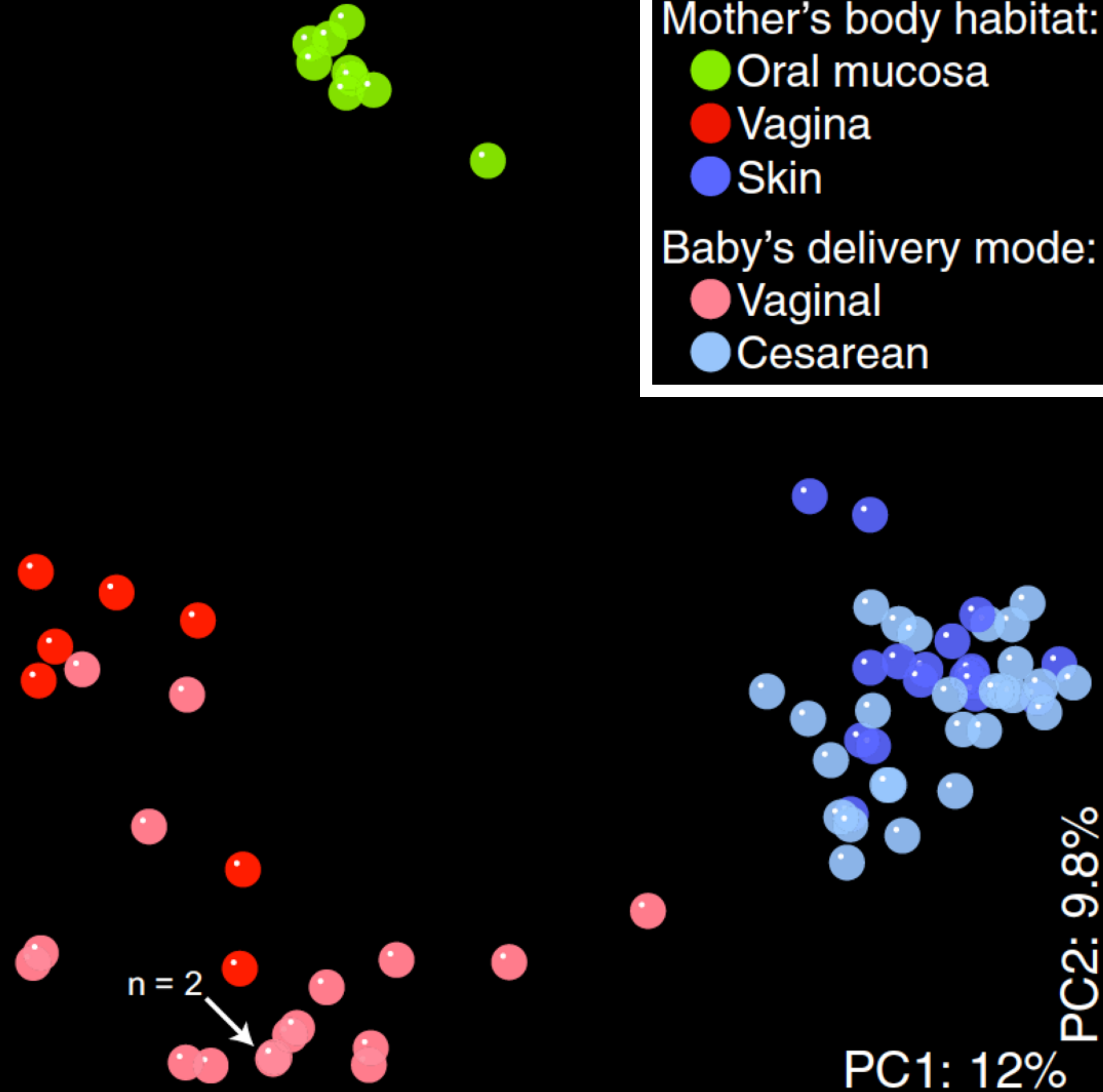
Fecal



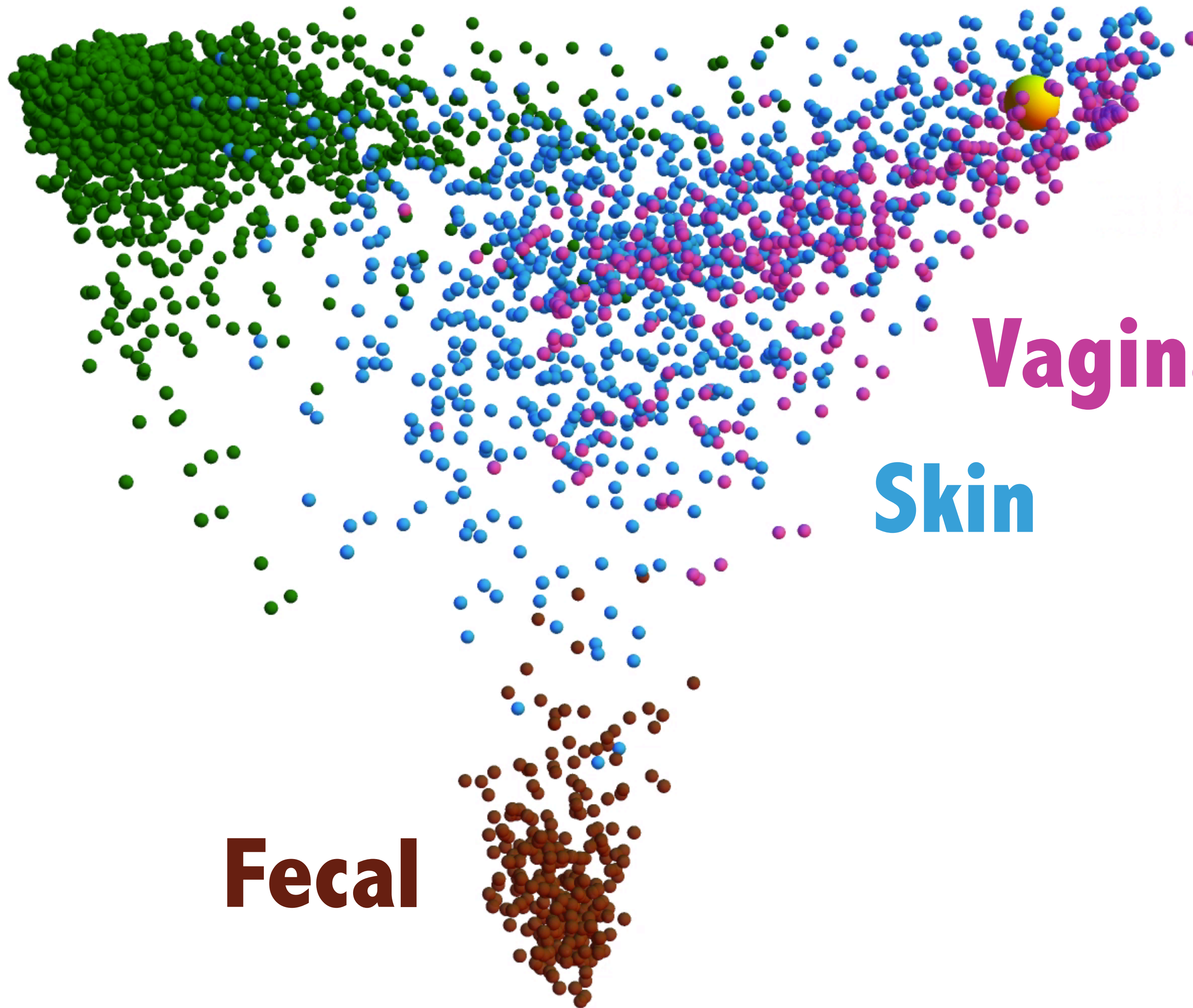


Mother's body habitat:
● Oral mucosa
● Vagina
● Skin

Baby's delivery mode:
● Vaginal
● Cesarean



Oral

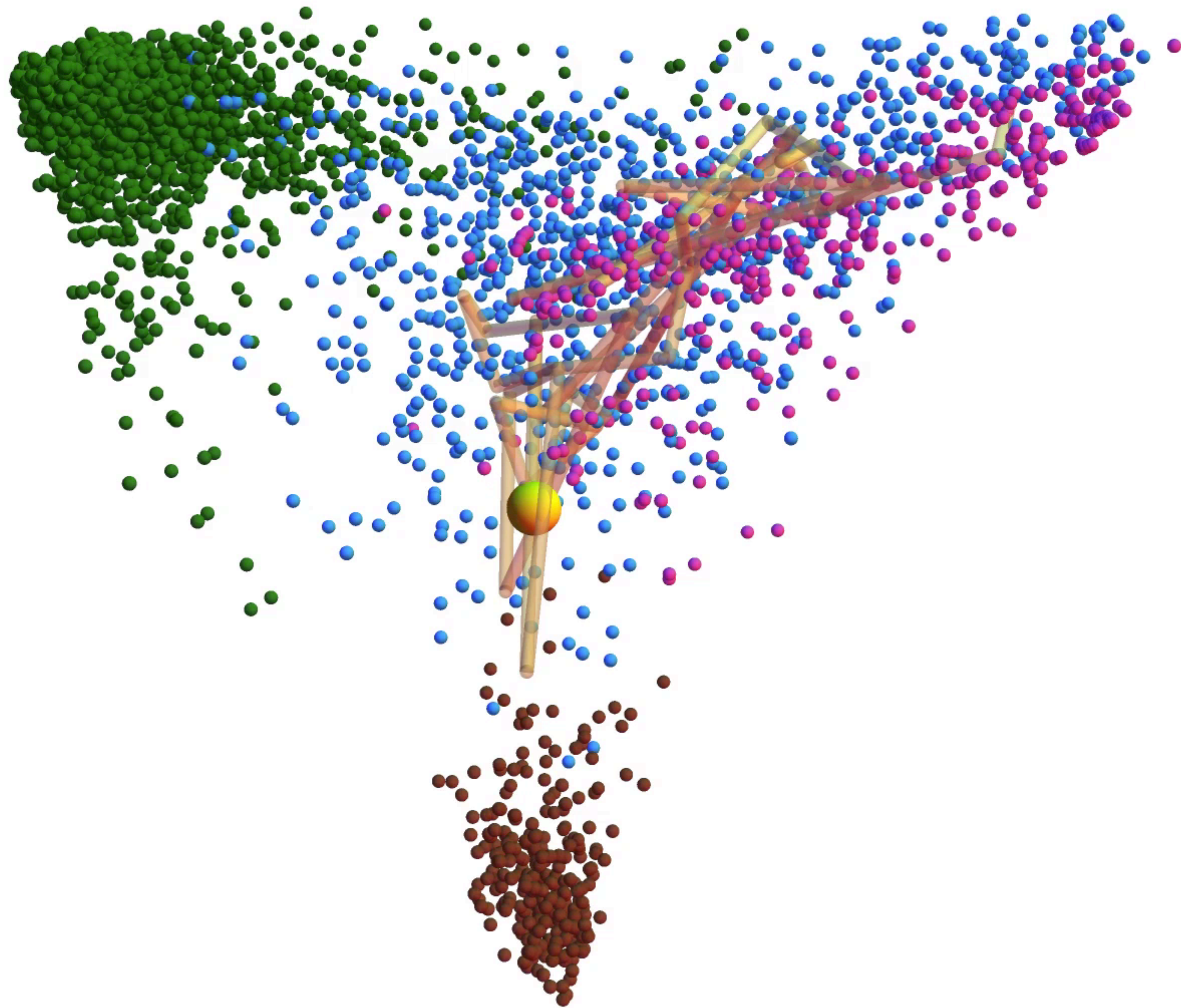


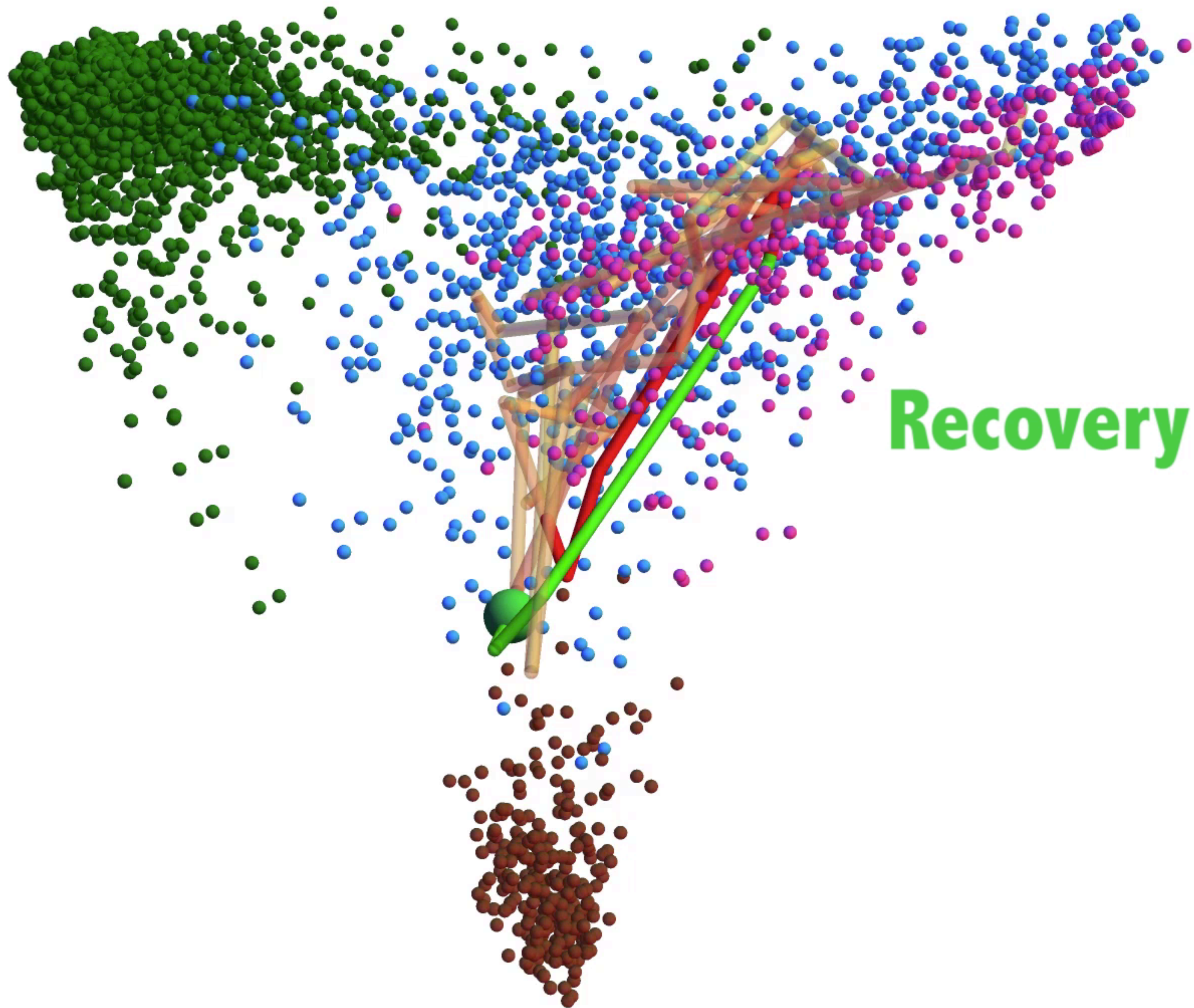
**Infant
(Fecal)**

Vaginal

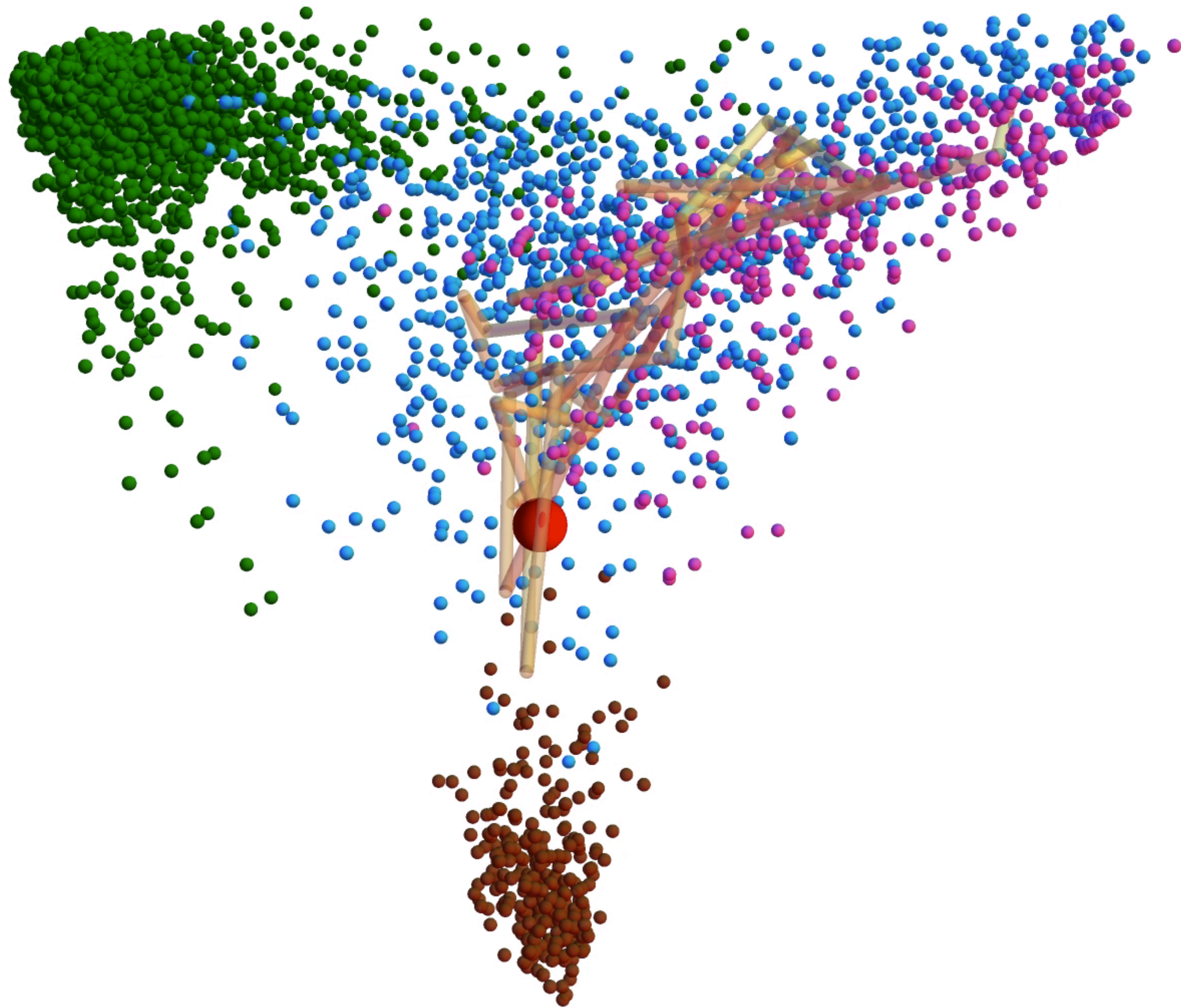
Skin

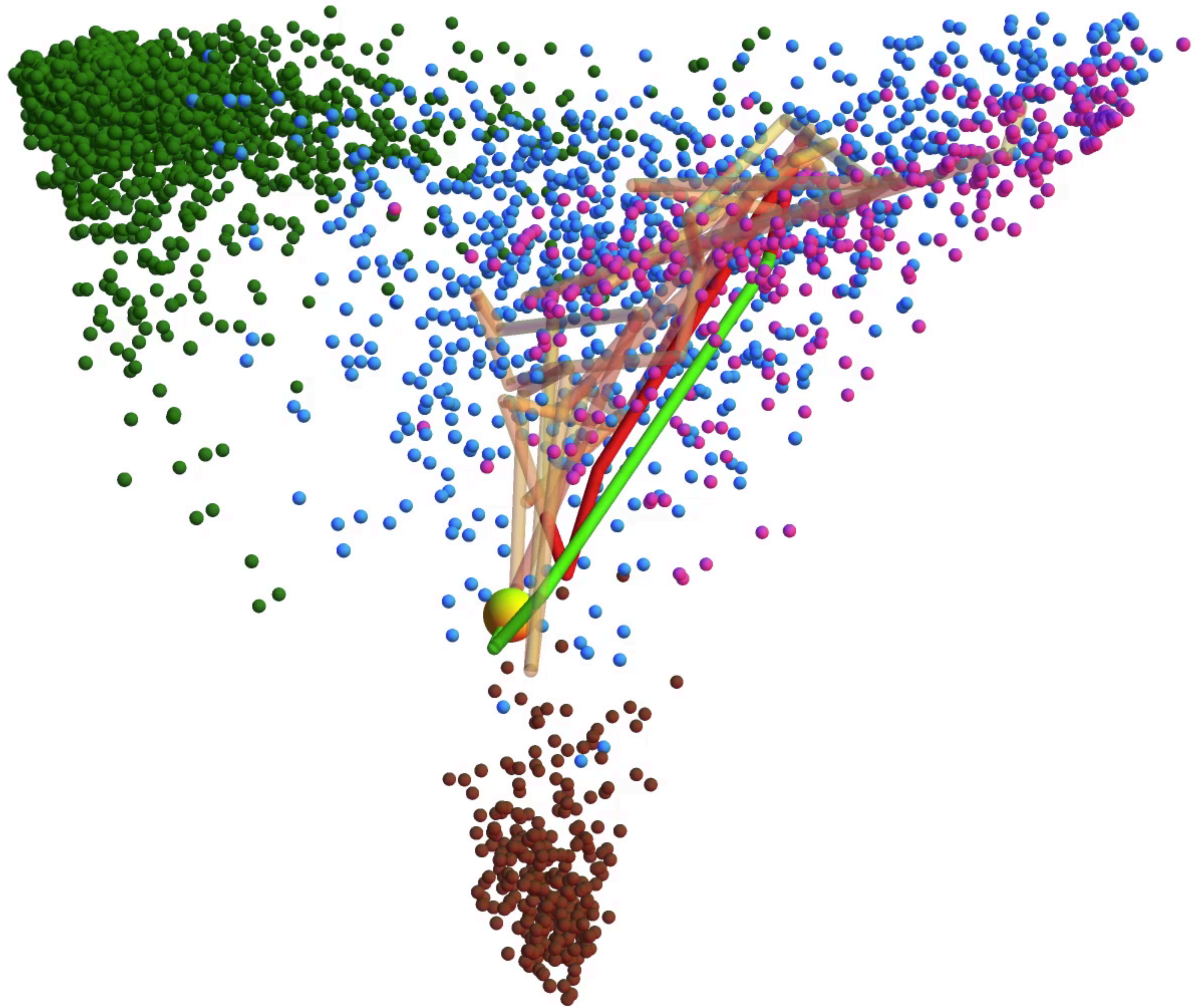
Fecal

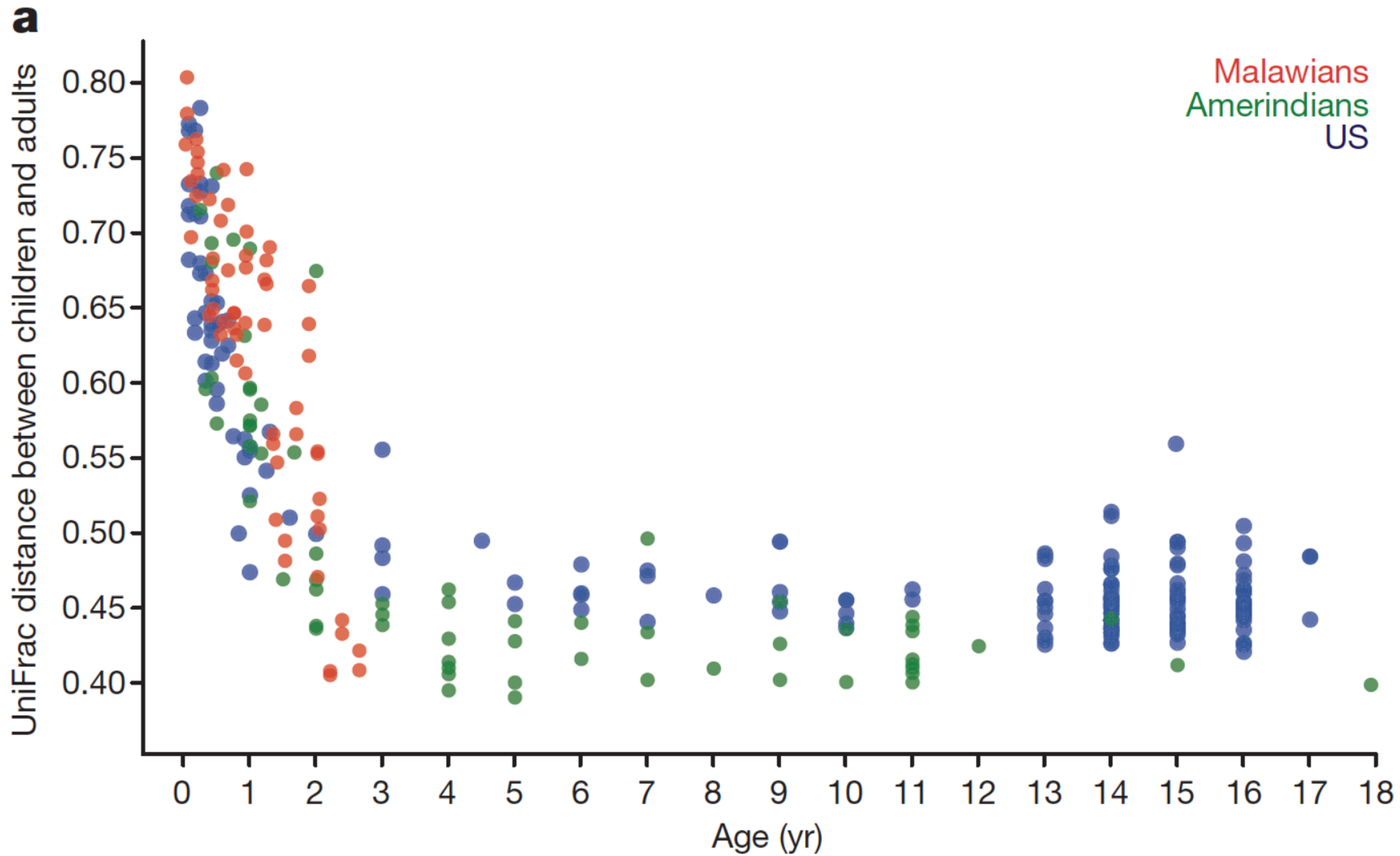


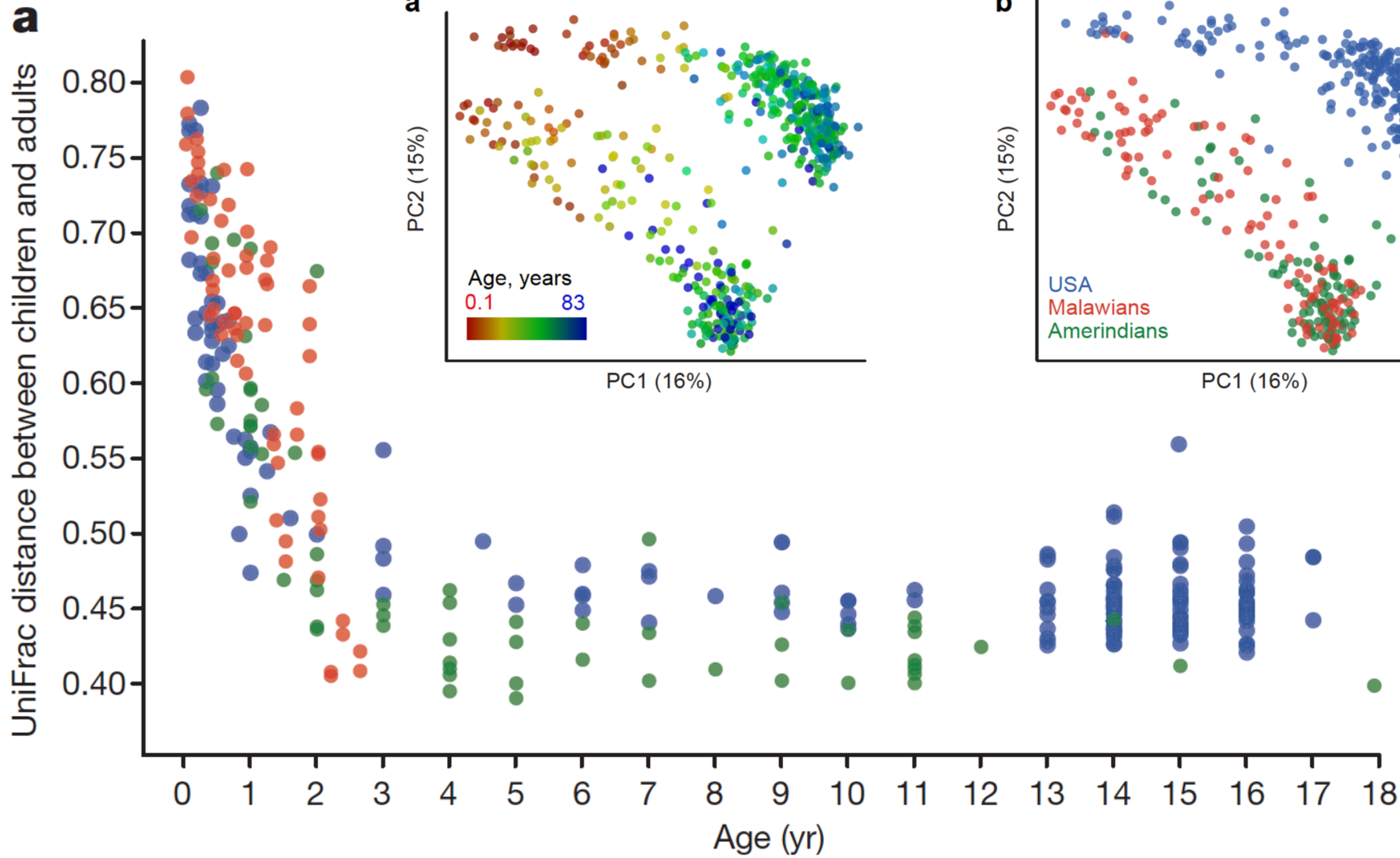


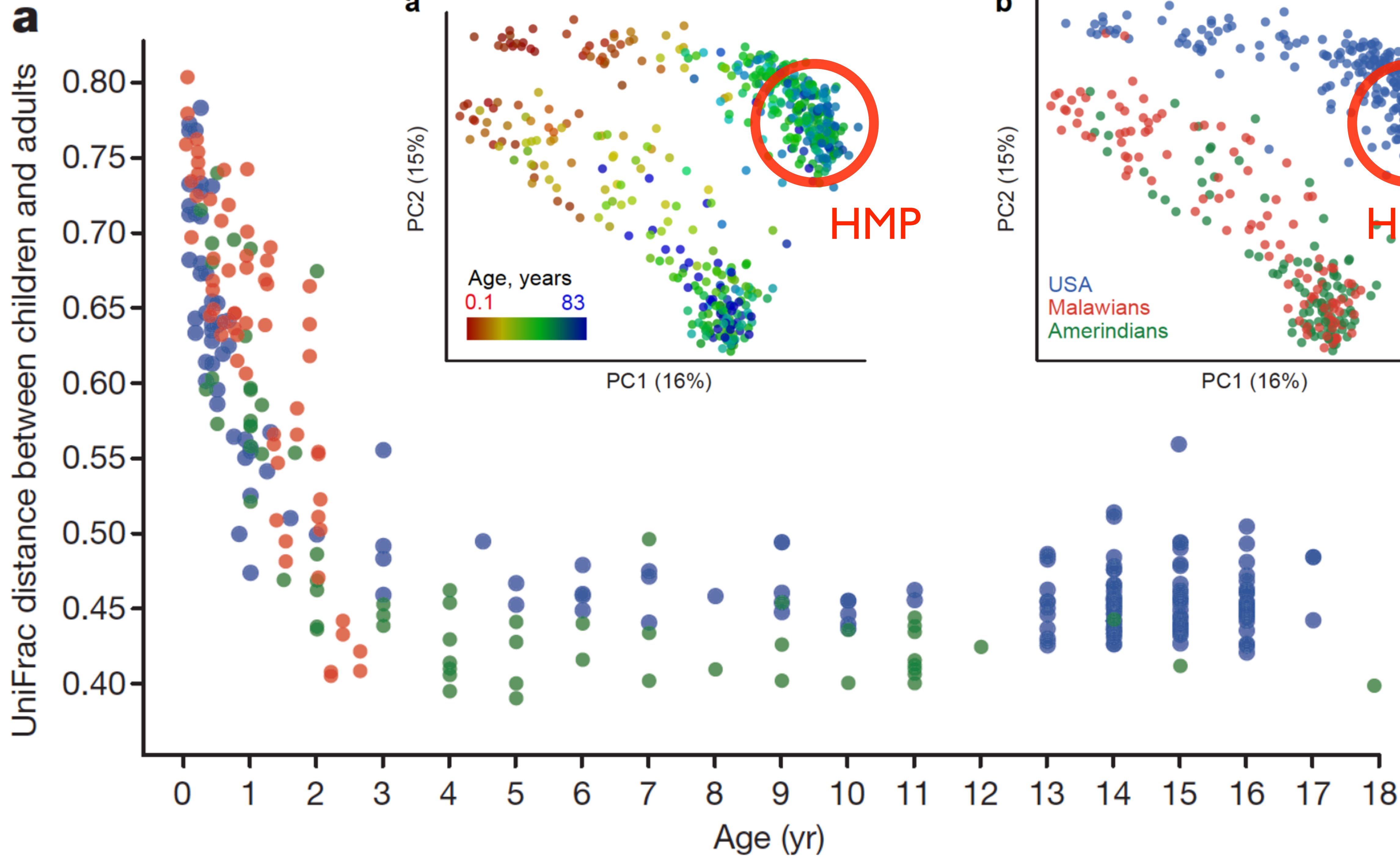
Recovery













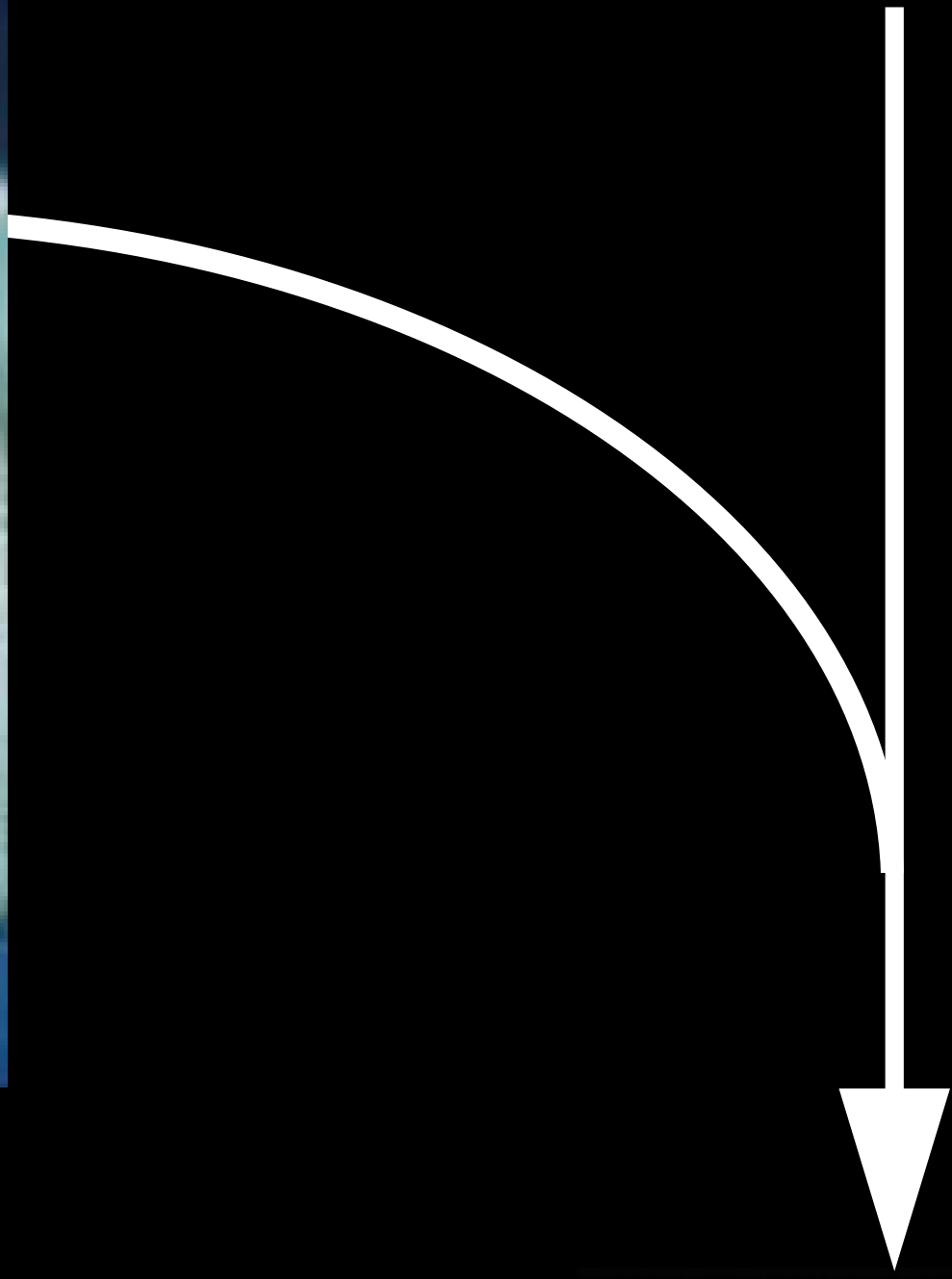


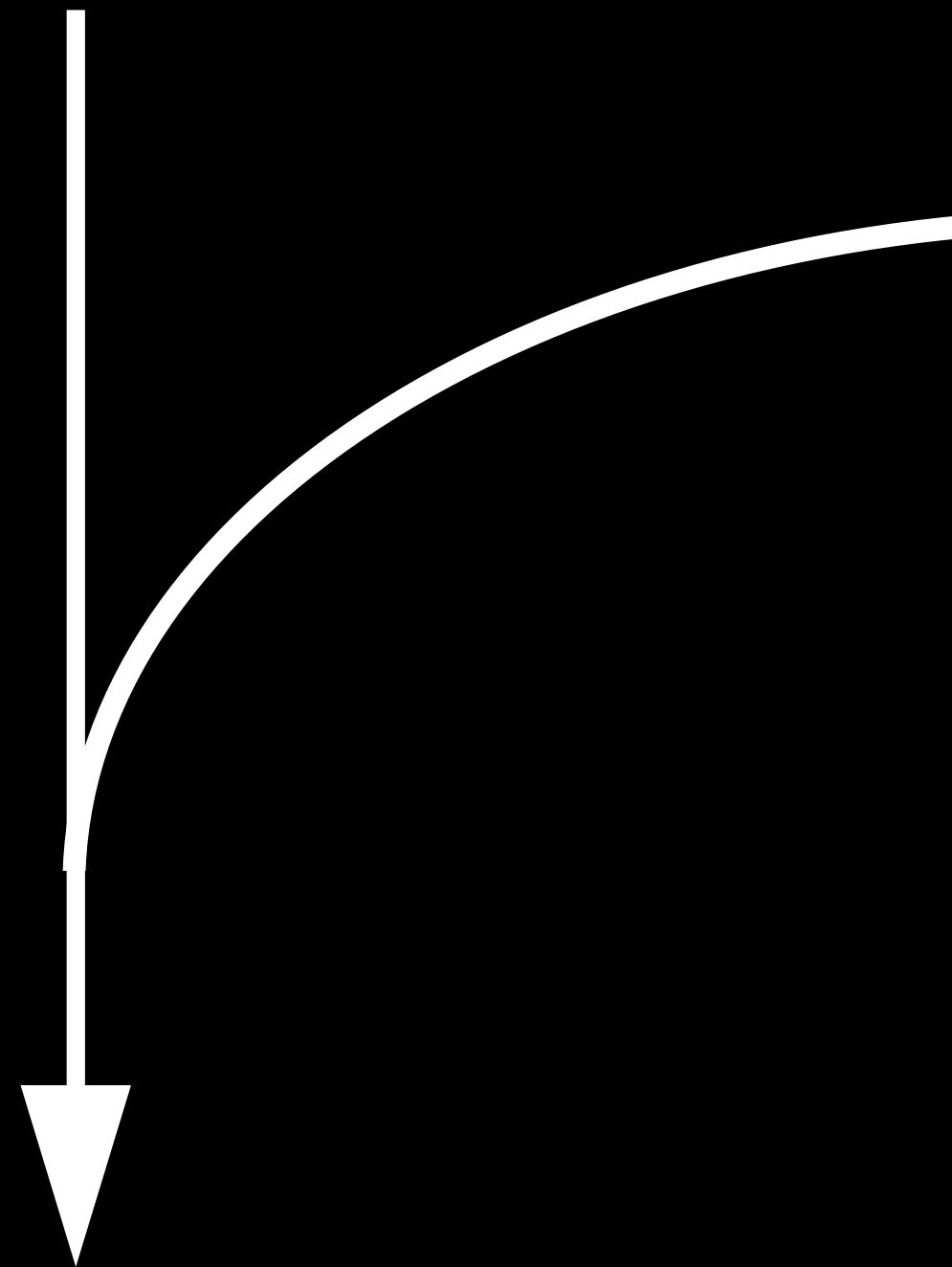




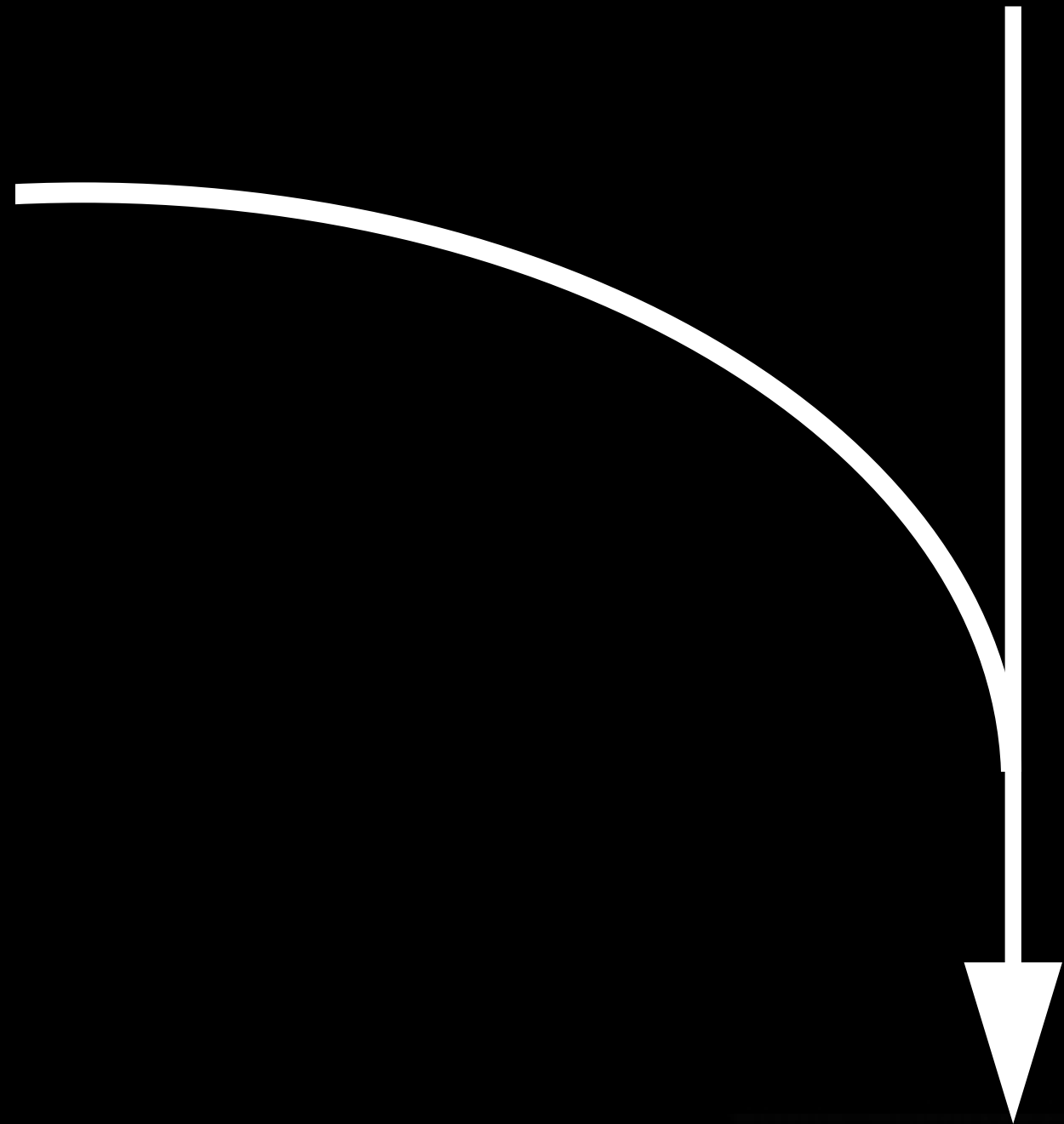












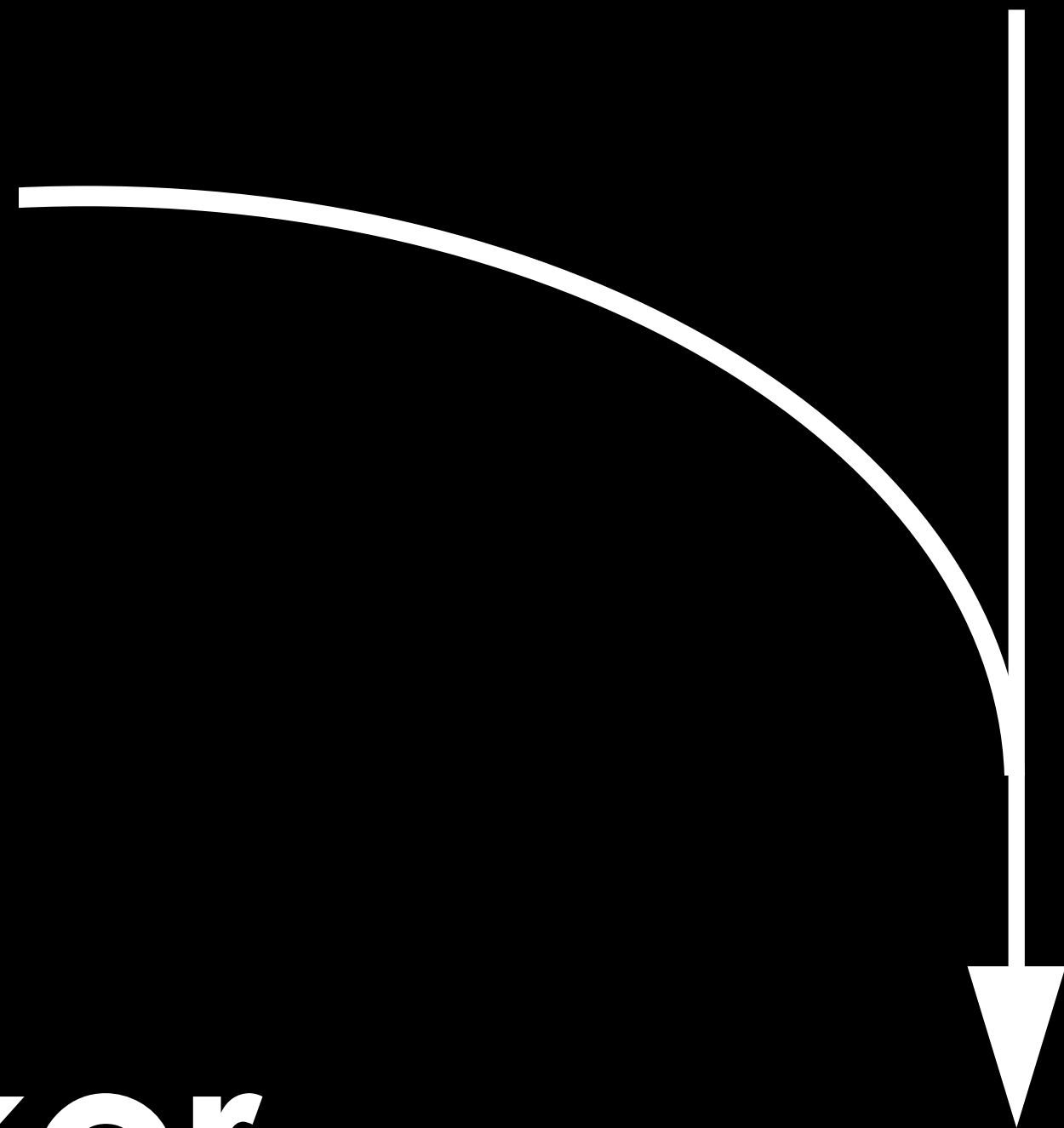


**Kwashiorkor
(malnourished)**

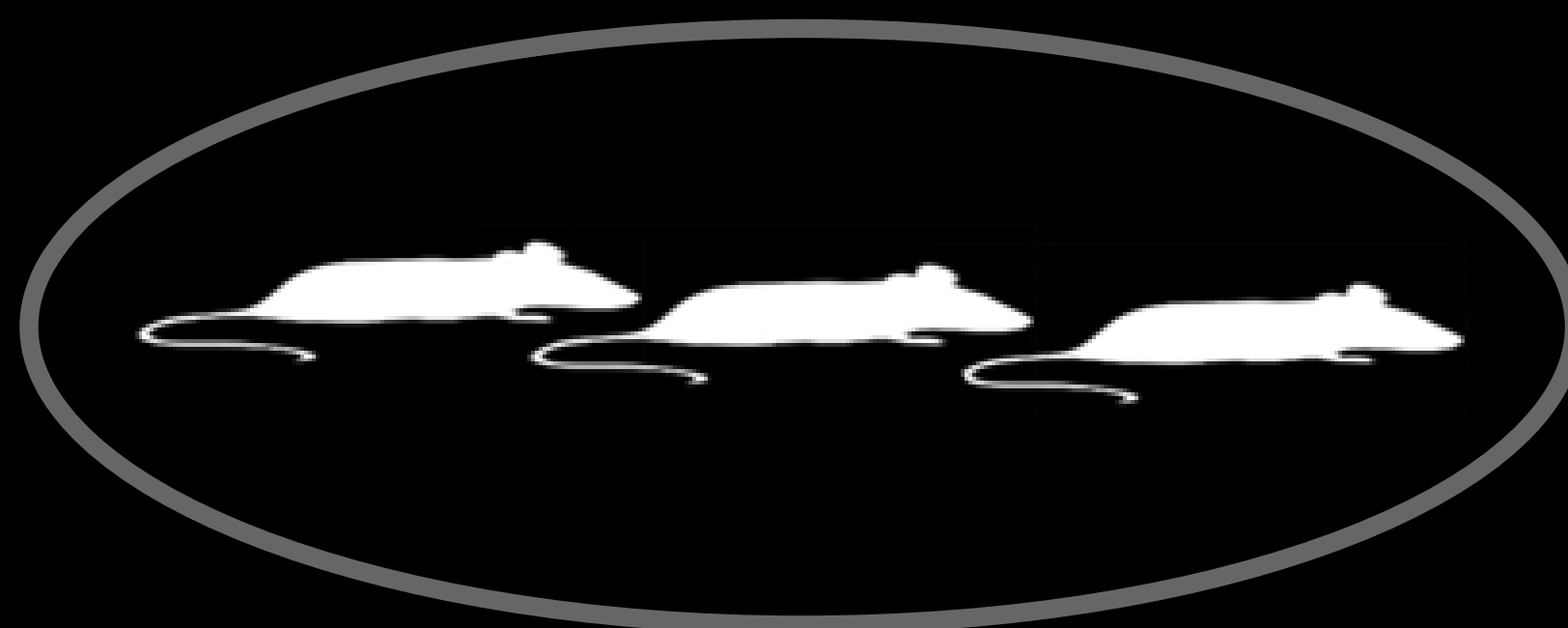
Healthy



**Kwashiorkor
(malnourished)**



Healthy

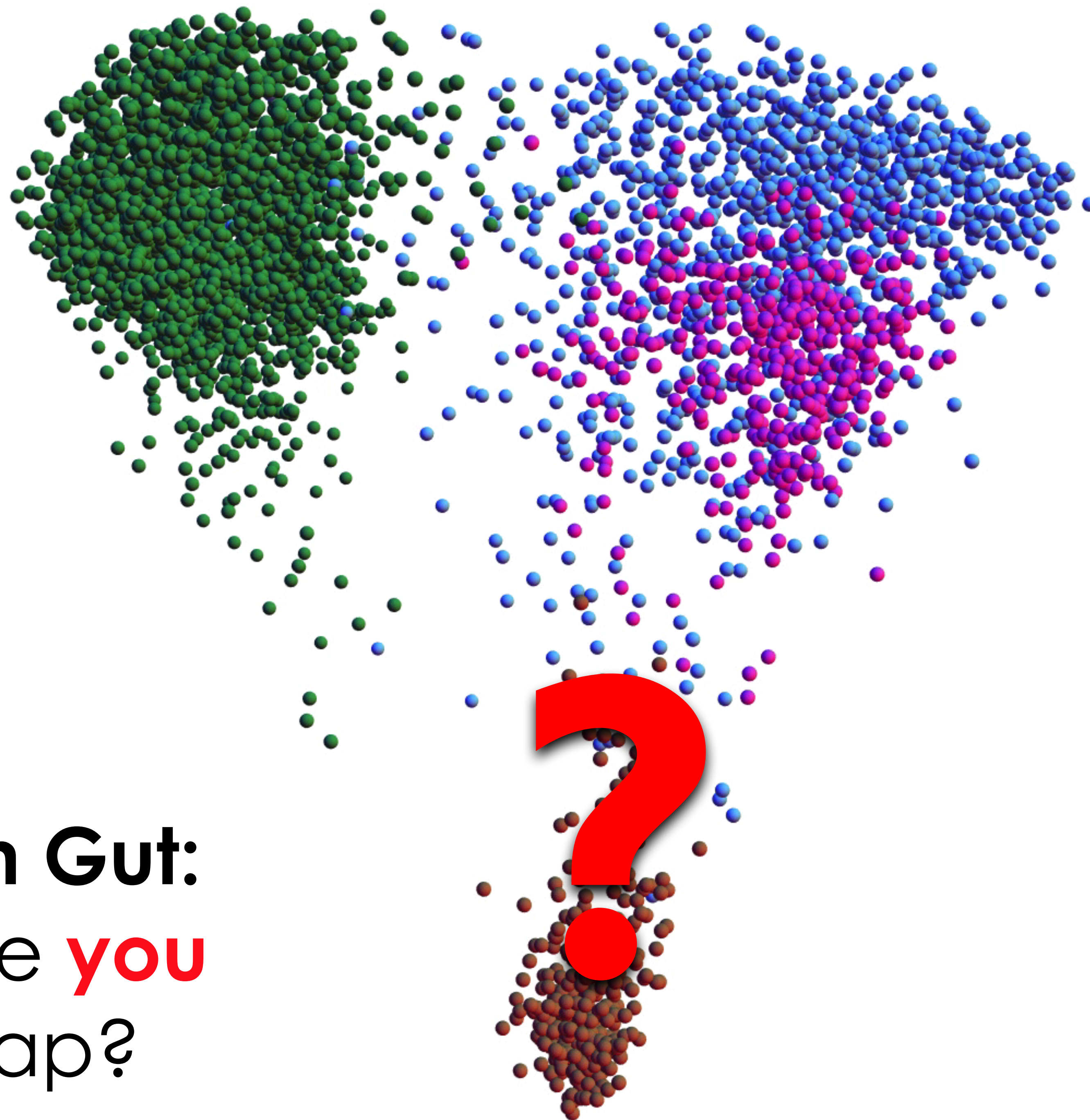




American Gut:
Where are **you**
on the map?

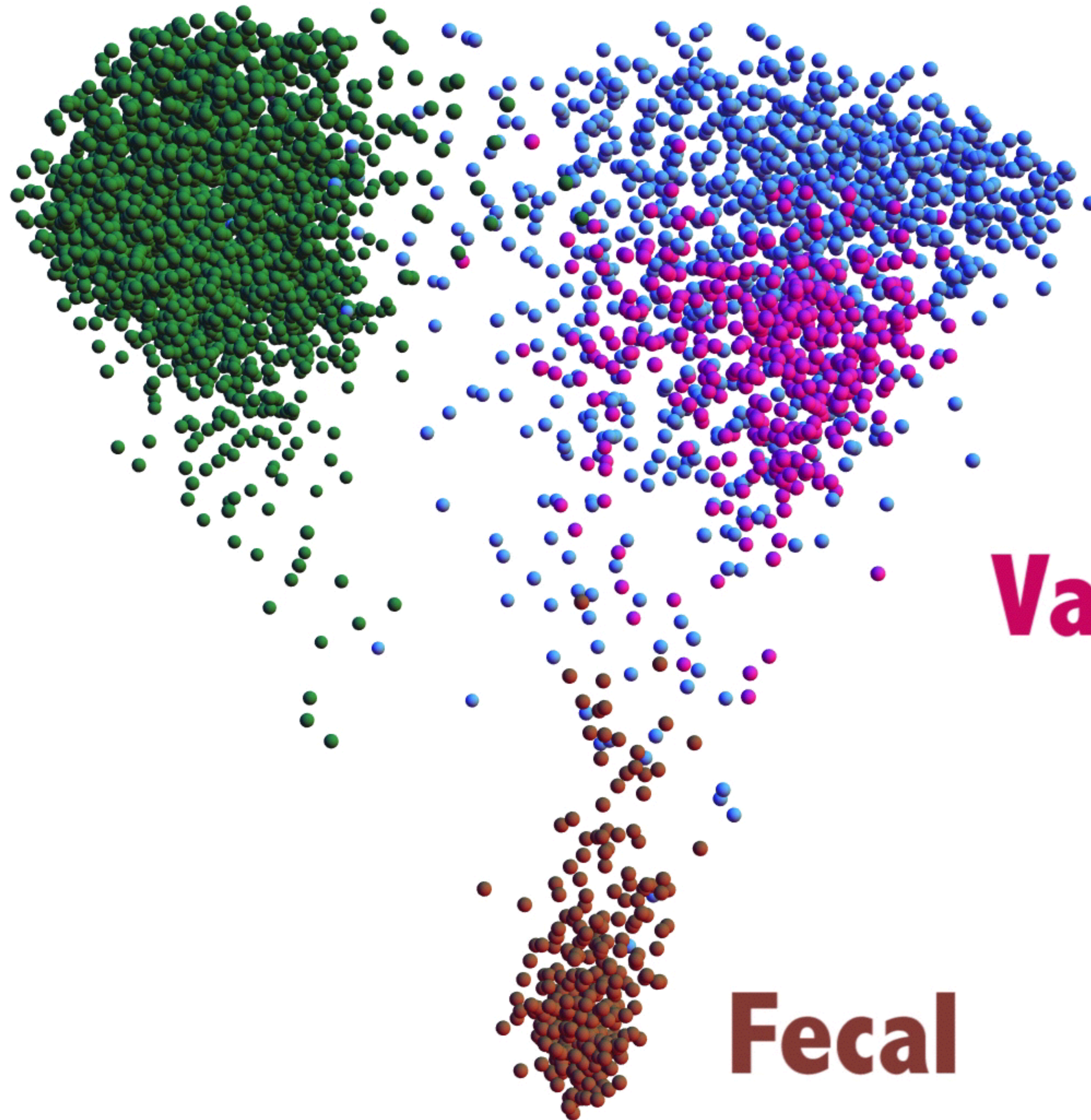


MO BIO
microbiome research



American Gut:
Where are **you**
on the map?

Oral



Skin

Vaginal

Fecal

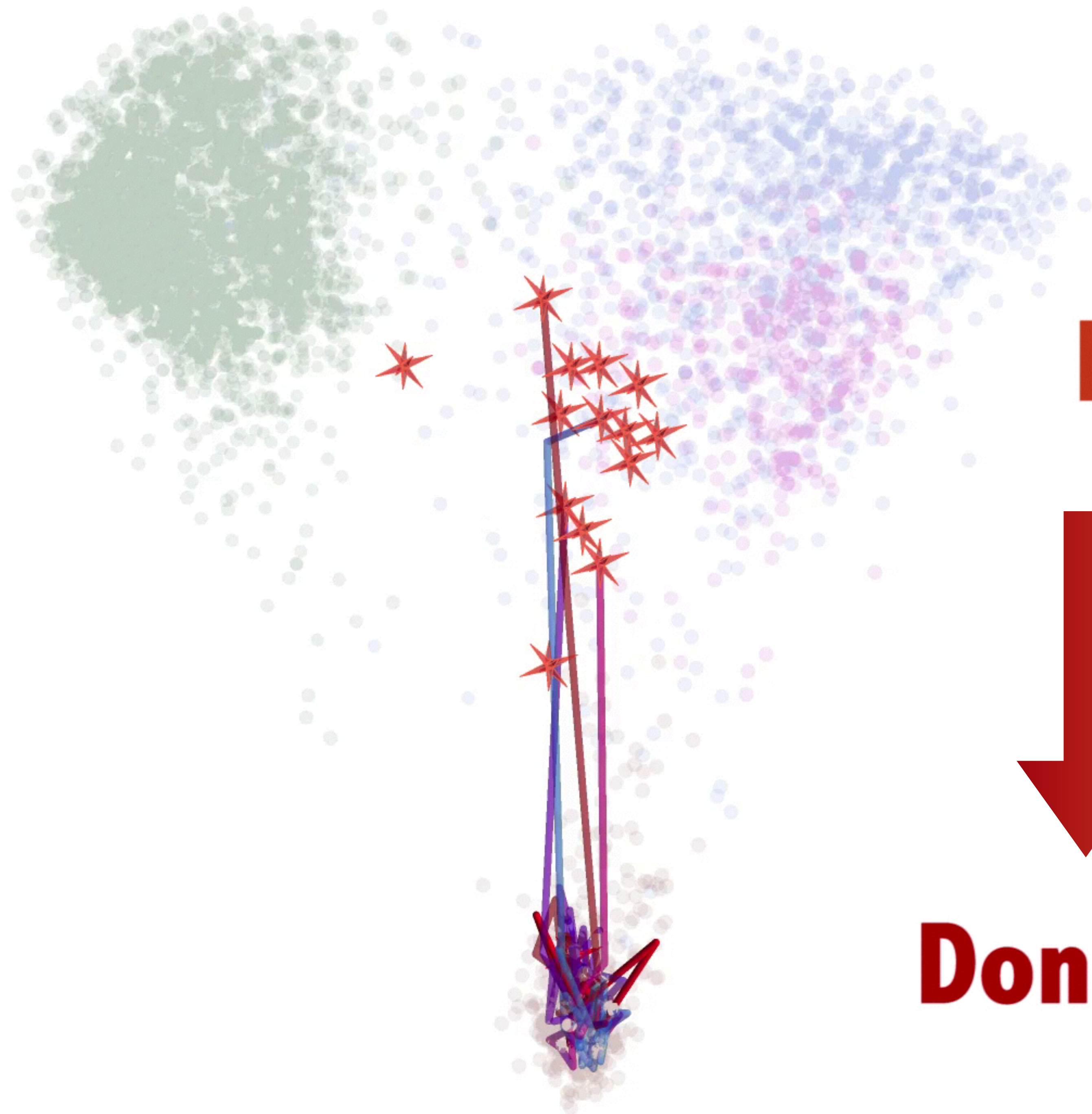




Patients

Donor





Patients



Donor



Acknowledgments

Brain analogy: Jonathan Eisen, UC Davis

UniFrac: Cathy Lozupone (CU Denver),
Manuel Ladser (CU Boulder)

HMP Consortium including Owen White
(U Maryland), Dirk Gevers (Broad),
Curtis Huttenhower (Harvard)

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(CU Boulder)

QIIME: Greg Caporaso (NAU) + dozens
more

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Dominguez (NYU), et al.

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al.

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Kris Meyer (CU), Jeff Leach (Human
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collaborators

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public