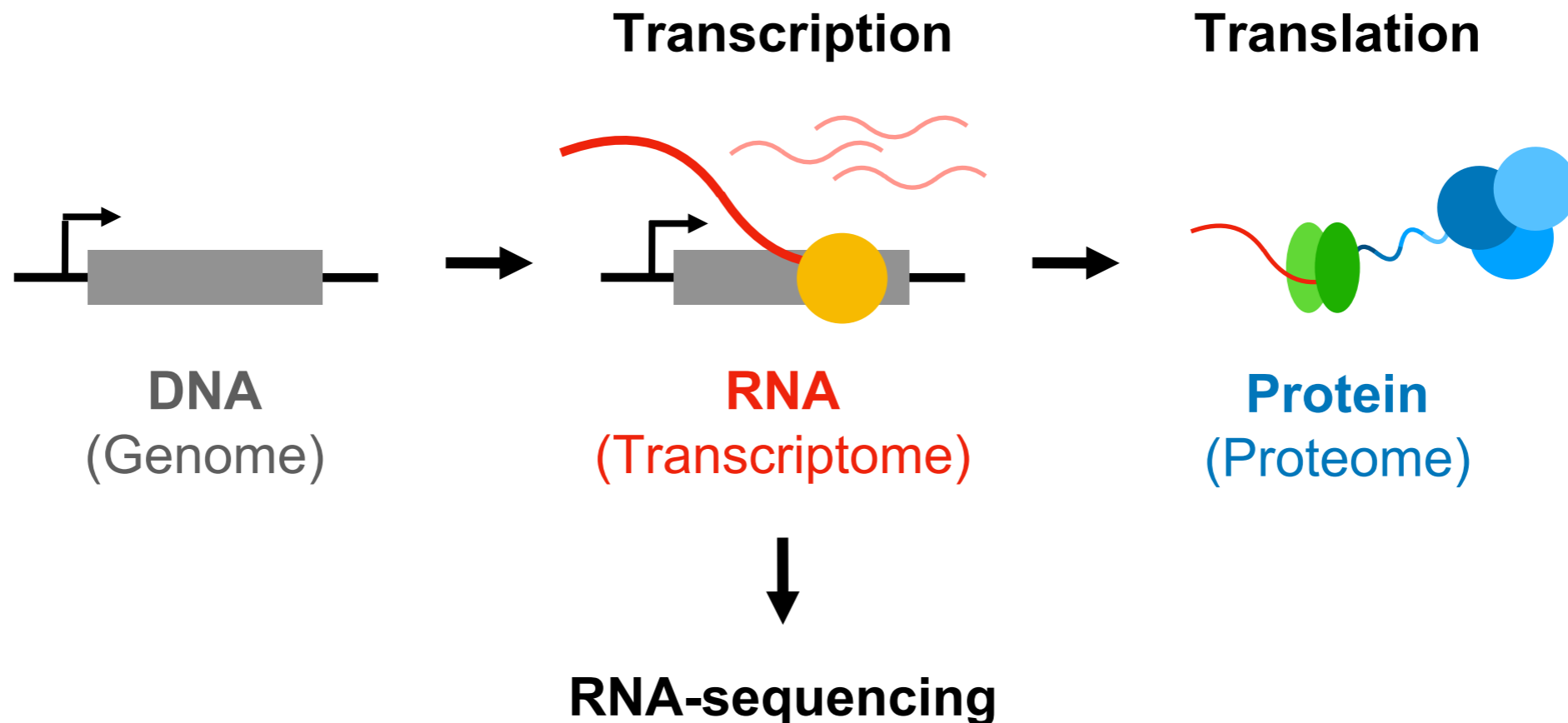


Biospecimen Collection Beyond Blood in MESA

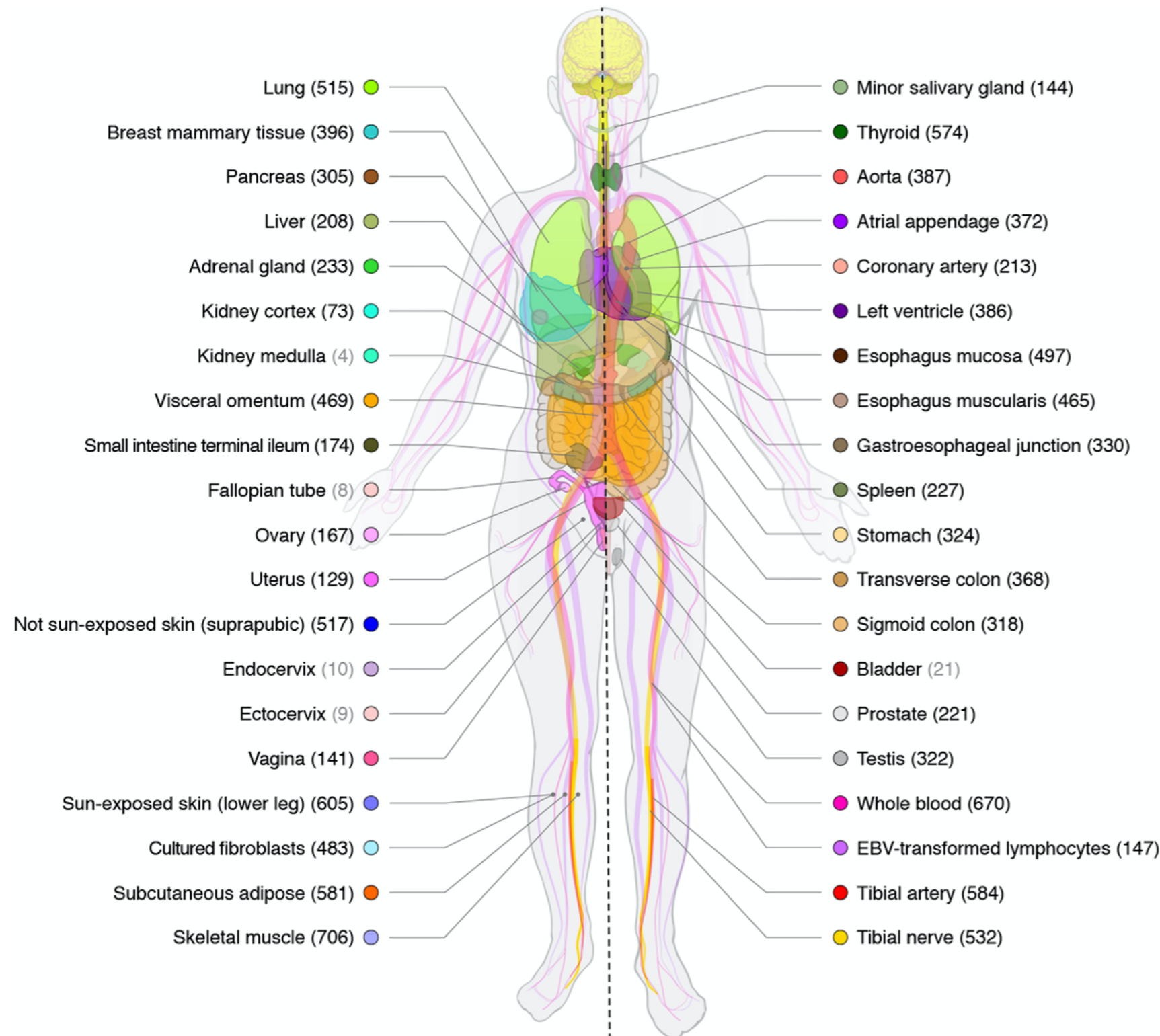
R Graham Barr MD DrPH

The Central Dogma of Molecular Biology



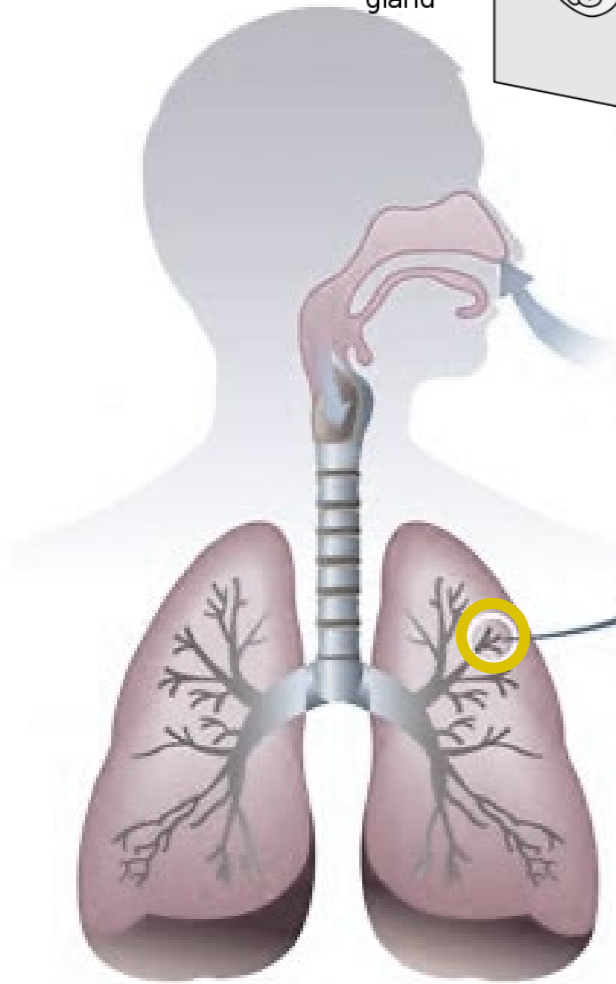
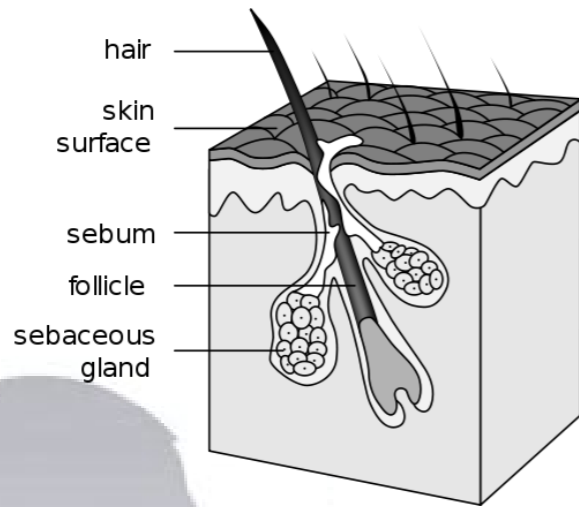
- Measuring RNA provides a functional readout of the genome by capturing gene expression levels.
- Gene expression is affected by both genetics and the environment.

Tissue Type Matters



- Important to study gene expression of tissues and cell types that are relevant to lung and heart disease.
- Accessing lung and heart tissue is difficult.
- We currently measure gene expression in blood, which is not a great surrogate
- Non-invasively sampled tissues may provide a surrogate

Lung Cells vs. Hair Follicle Cells

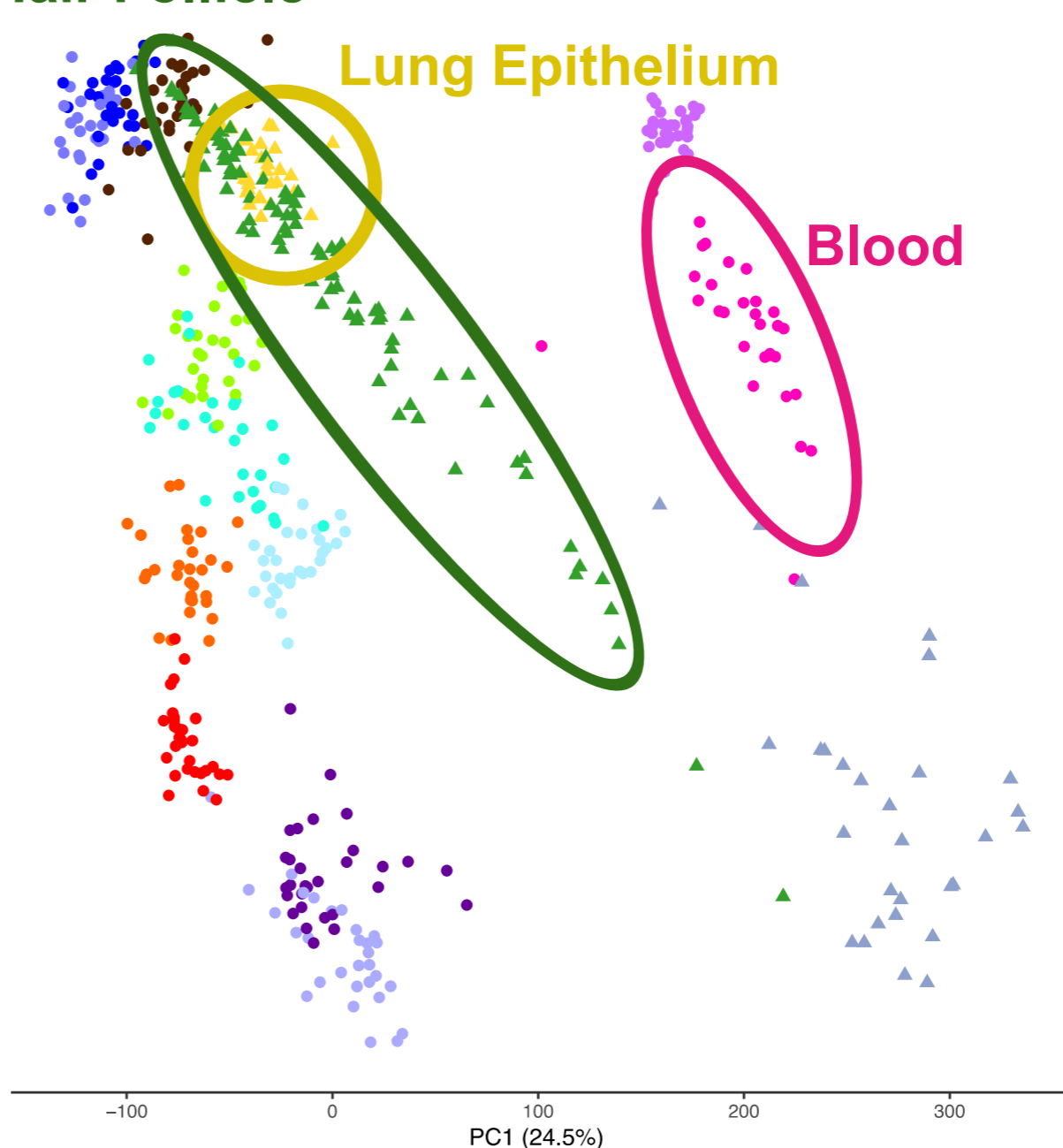


- Hair follicle cells that are very similar to epithelial cells in the lung.

Hair Follicle

Lung Epithelium

Blood



Study

- GTEx
- ▲ SPIROMICS

Tissue

- Adipose – Subcutaneous
- Artery – Tibial
- Bronchial Epithelium
- Buccal
- Cells – Cultured Fibroblasts
- Cells – Ebv-Transformed Lymphocytes
- Esophagus – Mucosa
- Hair
- Heart – Left Ventricle
- Kidney – Cortex
- Lung
- Muscle – Skeletal
- Skin – Not Sun Exposed (Suprapubic)
- Skin – Sun Exposed (Lower Leg)
- Whole Blood

Hair Follicle Collection

- Wearing gloves, pull hairs from the subject's scalp. This can be done one at a time with tweezers, or up to 10 at a time in bulk.
- Inspect the follicle side to ensure that there is tissue (discard if none)
- Do not touch follicle side of the hair
- Cut the hair tip into a microfuge tube
- Stick in freezer (within 5 min in -80C)

Hair Follicle Collection

