

# **BUILDING SYSTEMS: CHARACTERIZATION AND IMPACTS *OVERVIEW***

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# Session Goals

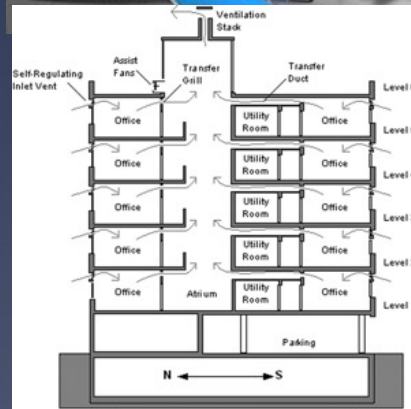
**Characterize three key building systems**

HVAC (heating, ventilating and air-conditioning),  
building envelope and interior surfaces

**System features likely to impact the indoor  
microbiome**

**Known links with the indoor microbiome**

# Variation Among Buildings and Building Systems



# Building Systems

## HVAC

- Heating/cooling
- Humidification/dehumidification
- Particle filtration/air cleaning
- Exhaust ventilation
- Air distribution

## Building envelope

- Keeps precipitation, other weather and other things out
- Allows interior to be more comfortable than outdoors

## Interior surfaces

- Separate building spaces
- Air “sees” all of them; occupants don’t



## Other systems

- Occupants (what they do, when & where they do it)
- Plumbing
- Food storage & cooking
- Outdoor environment (weather and contaminants)

# A Few Other Points

Role of building codes, standards, guidelines

- Minimum outdoor air ventilation rates; filtration efficiency; envelope construction for energy efficiency; ...
- Green building ratings and guidelines on the rise

Ventilation: Mechanical v. Natural v. Infiltration

Design intent not necessarily realized in practice

Unobvious but important building spaces, e.g. crawl spaces, plumbing chases, ...

