biome. This chapter covers general trends and guidelines on climate, microclimate, and environment. We will also explore the changes you can make without having to move to a different geographic location.

THE EFFECT ON MICROBIOTA

Unlike an astronaut's space suit, your skin doesn't completely isolate you from your environment. On a microbial level, the boundary between the world outside your body and your internal ecosystem is blurred. Microorganisms migrate and interact; to them, you are merely a part of the landscape.

> **Your body's microbiome is an extension of the microbial population of your surroundings.**

As a result, environmental changes, including climate shifts, that affect the microbial population in your location, will also impact your inner microbiota. Thus, these external factors affect your immune cells, influencing disease activity. We know that certain symptoms, such as joint pain, intensify with approaching inclement weather. Similar microbial-driven changes are widespread in nature. A common example is *petrichor*, the distinct, earthy aroma accompanying rain. This scent comes from chemicals released by soil bacteria in wet weather. Additionally, the rapid growth of mushrooms following rainfall illustrates the quick response of fungi. A more infamous example is the mold growth that occurs in basements or attics when there's a leak —an issue so destructive that many insurance policies specifically exclude it.

Such microbial shifts in our environment are a threat not only to framing and drywall but also to flesh and blood. As highlighted in *Key 1*, fungal growth significantly endangers your microbiome and overall immune health. Molds and yeasts are often linked to immune system disorders, especially when they settle in your gut. Hence, unsurprisingly, the most harmful climatic conditions for people are those favoring fungal growth—damp places with limited sunlight.

CLIMATE: GOOD VS. BAD

Here are the main guidelines:

- Dry is better than humid.
- Warm weather is better than cold.
- Moderately sunny is better than shady.
- Higher elevations are better than lower ground.
- Good ventilation is better than stagnant air.

> **Avoid damp, fungi-friendly places.**

Important: Moderately warm and sunny conditions are ideal. Excessive sunlight can worsen some autoimmune conditions. Limit your direct sun exposure if you experience skin or eye inflammation.

MICROCLIMATE: SMALL CHANGES WITHOUT A BIG MOVE

Around 900 A.D., the great scientist and physician Muhammad ibn Zakariyya al-Razi was searching for the ideal location for a new hospital in Baghdad. In his quest to promote health and healing, he devised an ingenious method to identify the best spot. He placed pieces of meat inside wooden columns throughout the city, observed them for a few days, and chose the location where decomposition was slowest. He concluded that this area offered the healthiest microclimate, making it best for patient recovery.

This story illustrates how variations in landscape, soil type, elevation, and wind direction can yield significant differences. The effects on grass and trees are obvious. Even within the same backyard, you may notice that certain spots are preferred by different vegetation. Less obvious is the impact these factors have on the invisible microbial world. Furthermore, prolonged exposure to these environments can influence your personal microbiome.

Two homes in the same block, or even neighboring rooms in a building, can present different mold risks and germ populations.

Enhancing your surroundings doesn't always mean moving to an entirely new area.

Seek Sun, Elevation, and Ventilation

Avoid perpetually shady places. Rather, choose south-facing locations, be it the slope of a hill or the side of a large building. The opposite is true for those in the southern hemisphere—lean towards the northern side. These areas receive more sunlight, typically making them warmer and drier.

Elevation matters, too. Simply ascending 20-30 meters on a hill or selecting a higher floor in a tall building can mean a healthier microclimate—purer air, less humidity, and enhanced sunlight.

Keep a Tab on Humidity

Damp and mold go hand in hand. Fungi thrive when relative humidity is 80% or higher, especially in places rich in organic matter. Environments with a relative humidity of 40-50% are best for health and comfort.

Sick House

Even if you live in an area known for its healthy climate, your home or office might be undermining your well-being. This phenomenon isn't new; it's often termed "*sick house*" or "*sick building syndrome (SBS)*."

Research by the World Health Organization (WHO) in 2009 suggests that up to 50% of indoor environments in regions such as Europe, North America, Australia, India, and Japan grapple with significant mold problems. The prevalence is even higher in locales like river valleys and coastal areas.

Several factors contribute to this unhealthy indoor setting:

- Excessive humidity due to poor design, water damage, or both.

- Inadequate ventilation.
- Insufficient sunlight exposure.
- Contaminated air conditioning ducts.

How can you find the problem? Here's how to check:

- Professional air sampling and analysis is the gold standard for detection, though it can be costly.
- Do-It-Yourself mold test kits, available at many home improvement stores, are more affordable but less accurate.
- Check for common signs of a *'sick house'*:
  - Water condensation on windows or other surfaces.
  - Visible mold growth, especially the menacing black mold.
  - A noticeable moldy odor.
  - Badly maintained air conditioning systems with old or dirty ventilation ducts.
  - A history of water damage or known leaks. Look for dampness in the basement, dripping or rusty plumbing, or roof faults.
  - Homes built into hillsides or those perpetually shaded by the surrounding landscape.
  - Older homes tend to have such problems more often.

In extreme situations, relocating might be the best choice. However, often, a few targeted repairs can make a world of difference. Remember, molds thrive in the presence of moisture, oxygen, and organic matter. While mold spores are everywhere, altering the environment can make it inhospitable for fungi, improving the microbial population in your home. Here's what you can do:

Tackle humidity:

- Address all leaks without delay: Repair roofing, plumbing, and siding.
- Invest in a quality *dehumidifier*: Target a humidity level between 40-50%.

- Address problem areas: Basements are humidity magnets as moist air is heavier and moves down. Also, pay attention to the attic—check for and repair any minor leaks.
- If necessary, install a sump pump.
- Ensure good ventilation and sunlight penetration.

Remove decaying and mold-infested materials:

- Treat or replace moldy materials such as drywall, insulation, framing, masonry, or carpeting.
- Carpets trap dirt and moisture, making them a breeding ground for mold and other pathogenic germs. Rather, opt for hard flooring, which is easier to maintain.

Enhance Ventilation:

- Install fans: Use them consistently, particularly in damp-prone areas like bathrooms, kitchens, and laundry rooms.
- Windows are your friends: Keep them open as much as possible to refresh the indoor air.
- Open windows on opposite sides of the building and across different floors to promote steady airflow, which is essential for a healthy microclimate.
- To enhance this effect, strategically place fans to direct air outward through the windows.
- Weather conditions often make it impractical to keep your windows open all day. In such cases, identify the best time to ventilate: early mornings for hot climates and afternoons for cold ones.

Invite sunlight in:

- Open your curtains or blinds to prevent rooms from being continuously shaded.