

How Green Infrastructure Grows Safer, Stronger Neighborhoods and Healthier People

Ming Kuo
University of Illinois at Urbana-Champaign

BECC 2016













Per Square Mile







Human evolutionary history



Stone Age

the present

Human evolutionary history



Stone Age

the present



Organisms in unfit habitats undergo social, psychological, and physical breakdown.

–all zoos, ever

Social breakdown

Social breakdown

- Aggression and violence

Social breakdown



Social breakdown



William Sullivan

Social breakdown

- WITHOUT UF: more aggression, violence, police reports of assault, battery, robberies, homicide, thefts, burglaries, arson, total crime, loneliness...
- WITH UF: more neighborhood social ties, social activities, social support, trust, altruism, generosity, feelings of belonging, feeling safe...

Psychological breakdown

Psychological breakdown

- Academic Achievement

Psychological breakdown

- Academic achievement
- Depression

near Urbana — Champaign



Psychological breakdown

- WITHOUT UF: more clinical depression, anxiety disorders, ADHD, sadness, fatigue, stress, distress, procrastination, impulsivity, ...
- WITH UF: more academic achievement, ability to concentrate, effectiveness in managing major life issues, delay of gratification, feelings of self-worth, awe, vitality, relaxation, capacity for independent living...

Physical breakdown

Physical breakdown

- cardiovascular disease

Physical breakdown

- Cardiovascular disease
- Diabetes mellitus

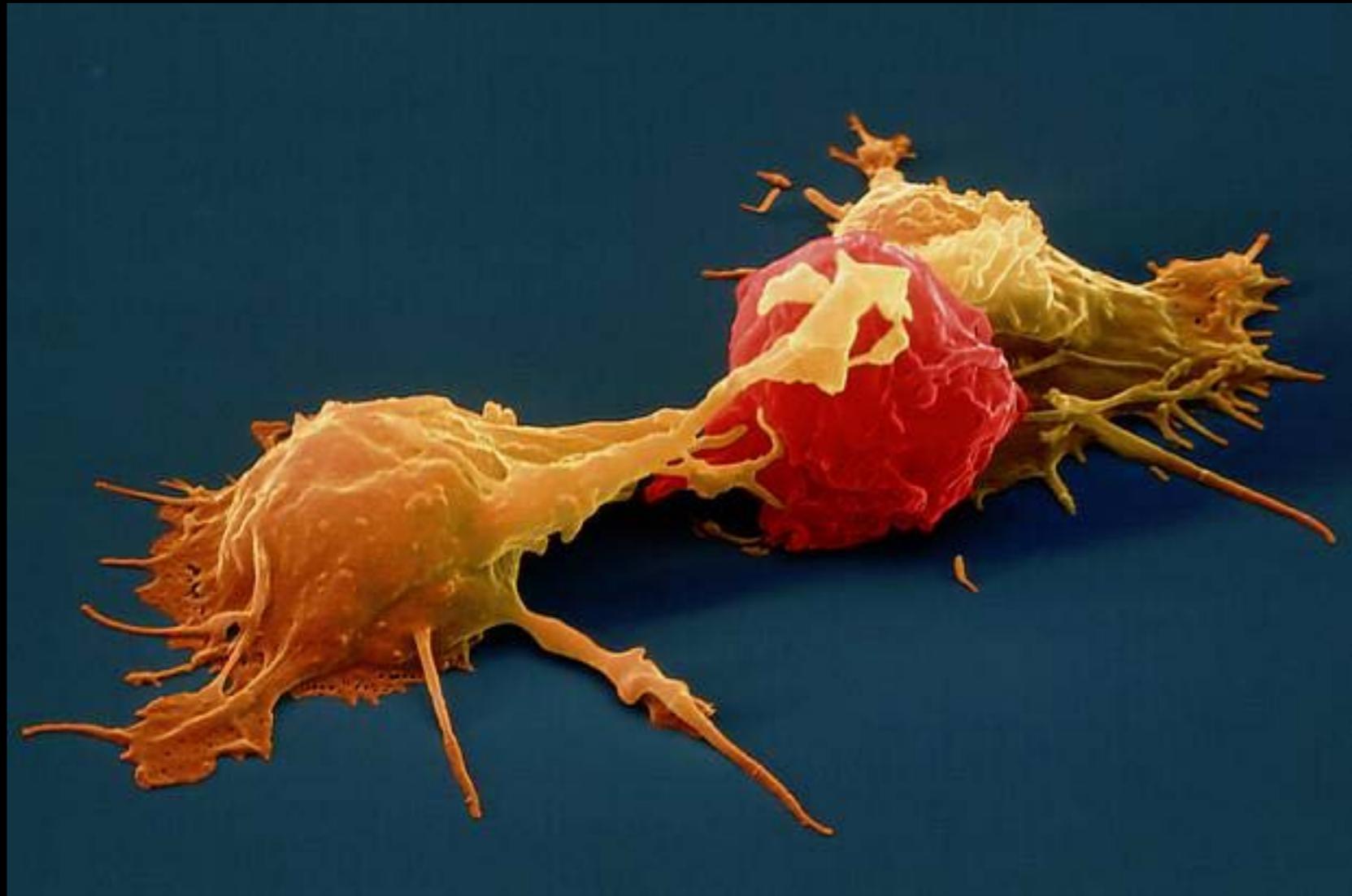
Physical breakdown

- WITHOUT UF: more cardiovascular disease, diabetes mellitus, obesity, upper respiratory tract infections (colds), musculoskeletal complaints, COPD, acute urinary tract infections, vertigo, migraine/severe headaches, cancer...
- WITH UF: more adiponectin, DHEA, healing from surgery, normalized blood glucose, birth outcomes, immune functioning...

“vitamin N”

Big doses have big effects

Big doses have big effects



Memorial Sloan Kettering

Tiny doses have real effects

Tiny doses have real effects



Everyday doses have huge
effects

Everyday doses have huge effects



In sum,

In sum,

- Contact with nature is important for social, psychological, and physical health

In sum,

- Contact with nature is important for social, psychological, and physical health
- It works like a vitamin

In sum,

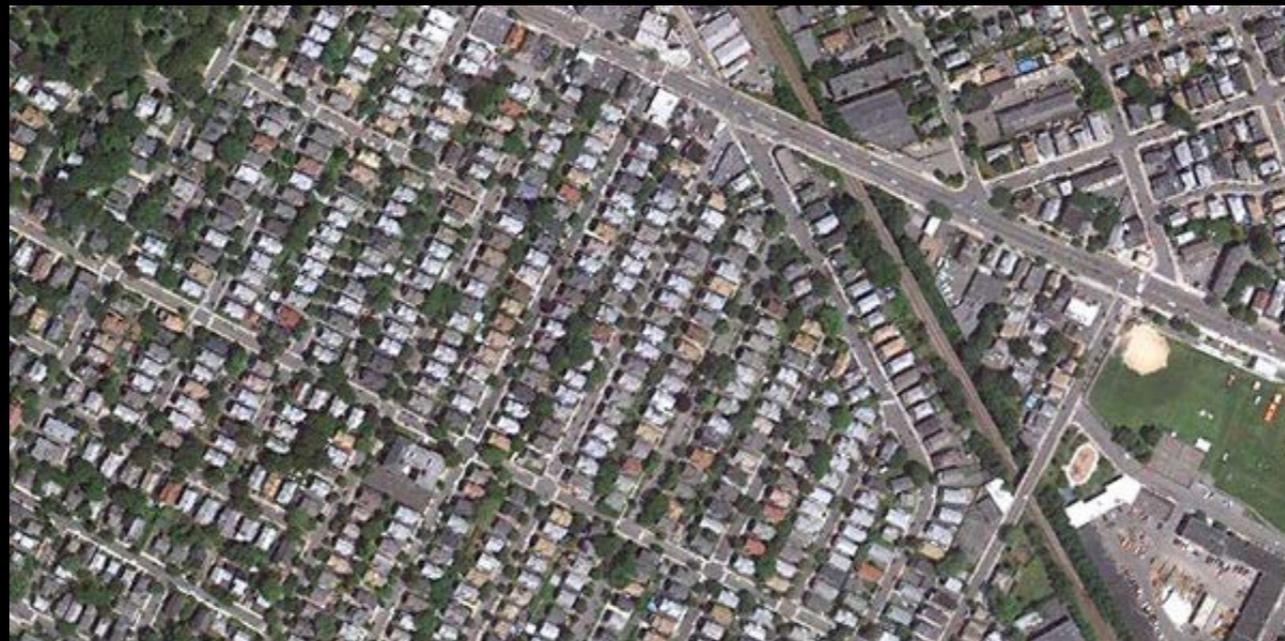
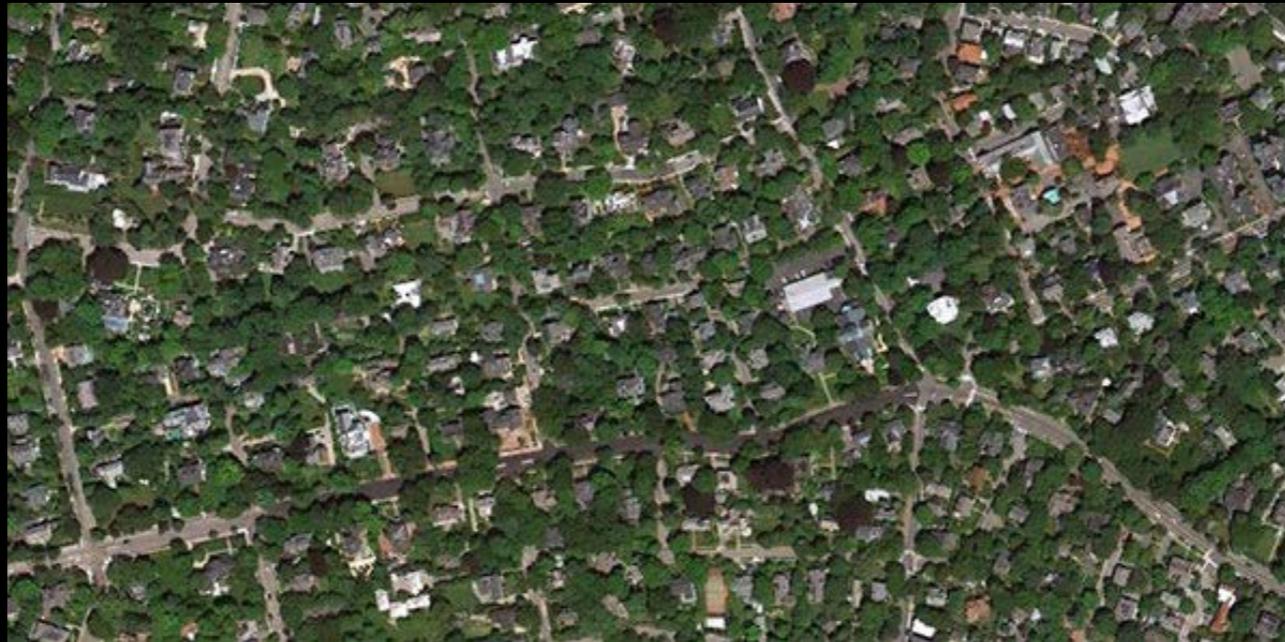
- Contact with nature is important for social, psychological, and physical health
- It works like a vitamin
- Its impacts on health are huge; every bit helps, and everyday nature is crucial

Suggestions

Suggestions

- WHERE
 - Put GI where it maximizes GPM: Green-Person Minutes
 - Put GI where disease burdens are the highest and green is least

You can see poverty from space



Per Square Mile

Suggestions

- WHAT KIND OF GI?
 - Phytotropic GI -- use species-wide techniques for maximizing GPM
 - User-specific GI

Suggestions

- HOW TO DO GI?
 - Work with users in design
 - ... In installation
 - ... In maintenance



!Gracias!