Towards healthcare sustainability

alliance for natural health INTERNATIONAL

Robert Verkerk PhD

Founder, executive & scientific director

Alliance for Natural Health International

anhinternational.org

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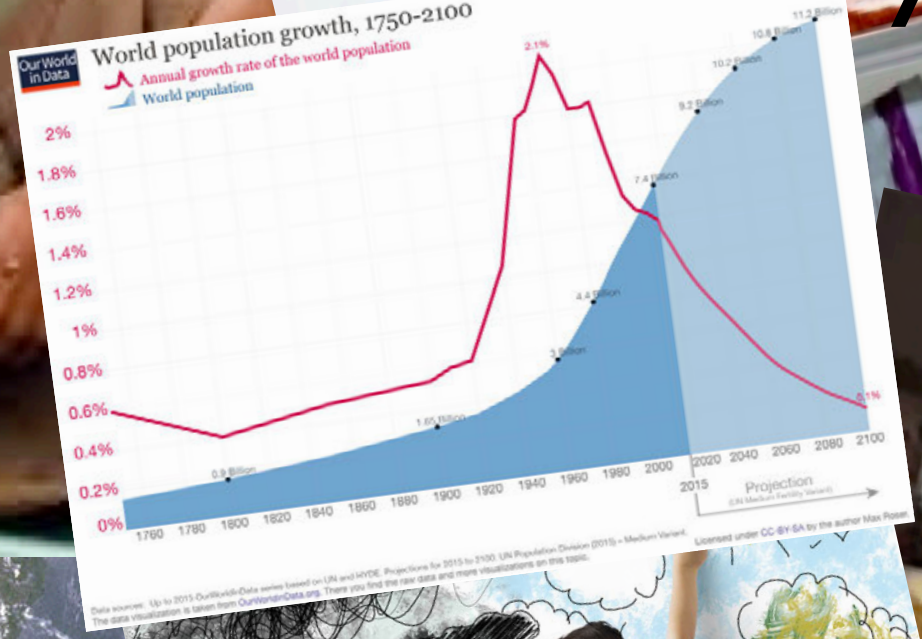
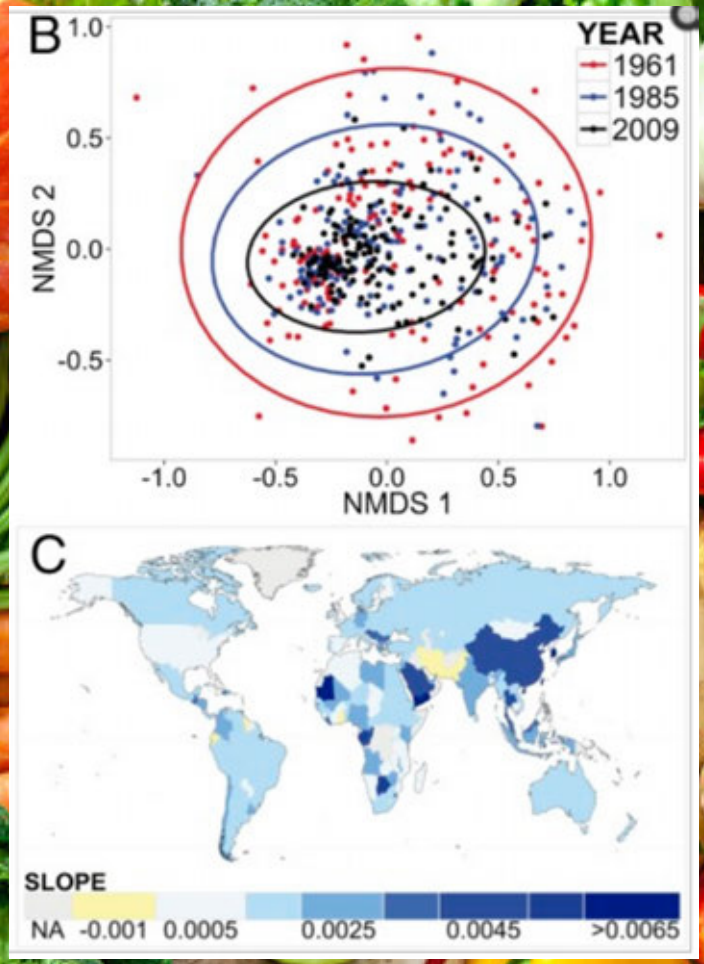
Planetary
health
Human
health

Markers of unsustainability



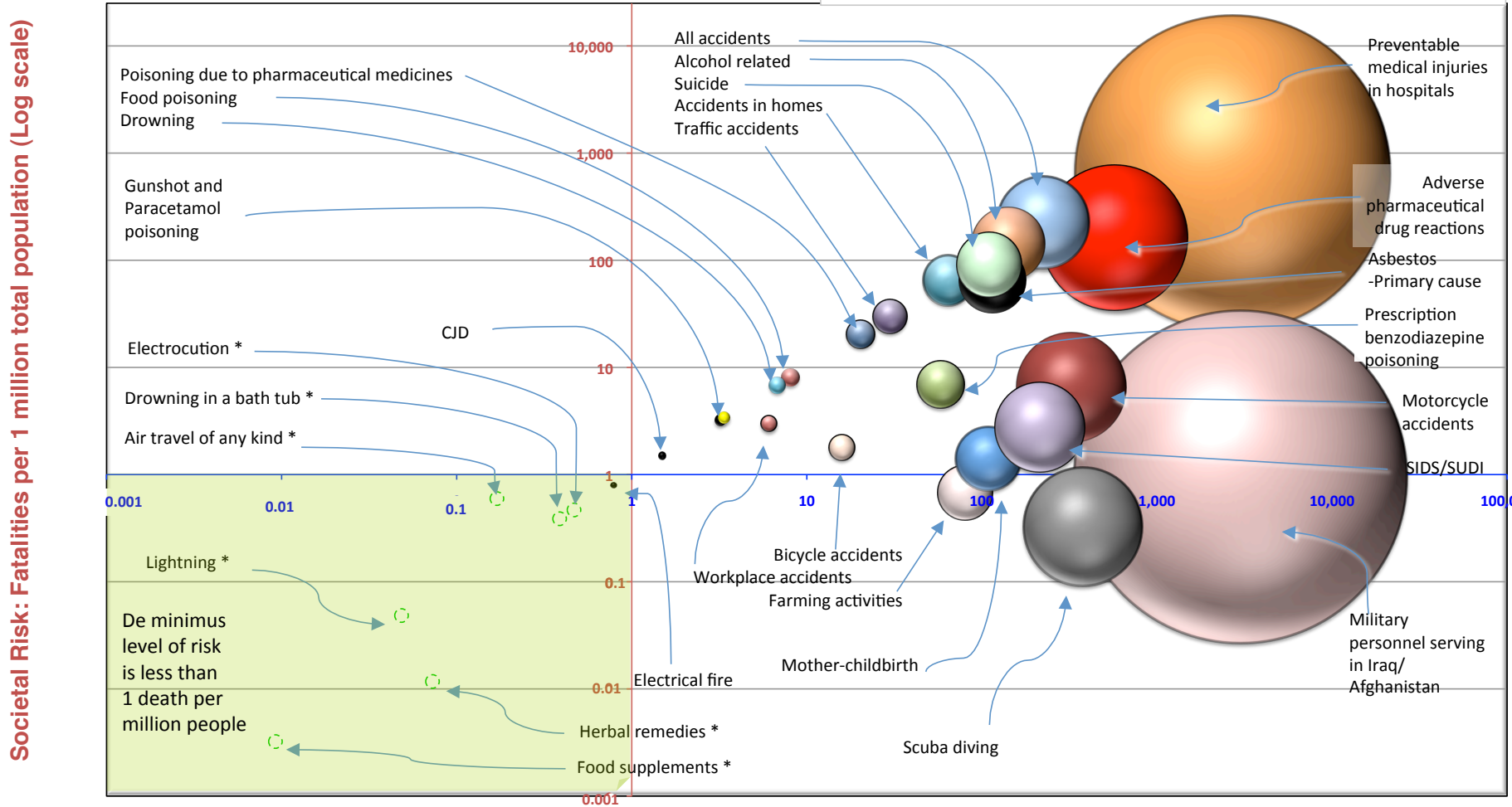


Khoury CK et al. Increasing homogeneity in global food supplies and the implications for food security. *Proc Natl Acad Sci U S A*. 2014 Mar 18;111(11):4001-6.


Pharmaceutical
Non-pharmaceutical

Societal vs Individual Risk of Death in the United Kingdom

Societal risk is represented as the risk of death per million total population. Individual risk is represented as the risk of death per million exposed to that hazard. Bubble size represents the relative risk to an individual. By way of example, the bubbles representing deaths due to preventable medical injuries in hospitals and military personnel in Iraq/ Afghanistan are a similar size because the risk of death to a patient in a UK hospital is similar to that for a soldier deployed to a war zone. Medical injury poses a greater risk to society simply because vastly more citizens are exposed to that risk and hence die. **Note: Log scales.**



* Note: Green dotted circles represent bubbles/dots too small to print

v3

Sources: Variety of UK Government and NGO databases, reports, officials and expert advisers.

Commissioned by Alliance for Natural Health International (www.anhinternational.org)
Funding by Neal's Yard Remedies (www.nealsyardremedies.com)

Individual Risk: Fatalities per 1 million people exposed to risk (Log scale)

OP.3C.04

COMBINATION OF HEALTHY LIFESTYLE FACTORS ON THE RISK OF HYPERTENSION IN A LARGE COHORT OF HEALTHY ADULTS

H. Lelong[1], E. Kesse-guyot[2], P. Galan[2], S. Hercberg[2], J. Blacher[1]. [1]*Assistance Publique-Hôpitaux de Paris; Université Paris Descartes, Paris, France,* [2]*Paris 13, Sorbonne Paris Cité University, UREN (Nutritional Epidemiology Research Unit) - U557 INSERM; U1125 INRA; CNAM Bobigny, France*

Objective: Hypertension is the most prevalent chronic disease worldwide. Lifestyle behaviors for its prevention and control are widely recommended by guidelines. Nevertheless, little is known about their synergistic impact on hypertension, particularly in the general population. The aim of the present study was to compute a score of healthy lifestyle index (HLI) comprising the main non-pharmacological measures usually recommended to reduce the risk of hypertension: normal weight, physical activity, limited alcohol and salt consumption, and a healthy diet like the Die

Design an
80,426 Fren
etary, socio-
using a dedi
sessed by n
mass index,

Results: D
hypertensio
the hazard ratios for hypertension were HR: 0.76 (95% CI, 0.67–0.85) for 1 factor, 0.47 (95% CI, 0.42–0.53) for 2 factors, 0.35 (95% CI, 0.30–0.41) for all healthy lifestyle factors (P-trend < 0.0001). Compared with adhering to 0, 1, 2 or 3 healthy lifestyles, adhering to all them was found associated with a reduction of the hypertension risk of half (HR = 0.55 (95% CI, 0.46–0.65).

Conclusions: In this large French cohort of healthy adults, adherence to healthy lifestyle factors was associated with a lower incidence of hypertension. In terms of public health, active promotion of healthy lifestyle factors at population level is key to combating the hypertension epidemic.

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Journal of Hypertension: September 2017
doi: 10.1097/01.hjh.0000523059.94686.8c

THE FASEB JOURNAL
The Official Journal of the Federation of American Societies for Experimental Biology

Paleolithic Diet and Exercise Improve Metabolic and Cardiovascular Risk Factors

Mark Baker, Alex Eason, Lauren Miutz and Amy Morrison Gyorkos

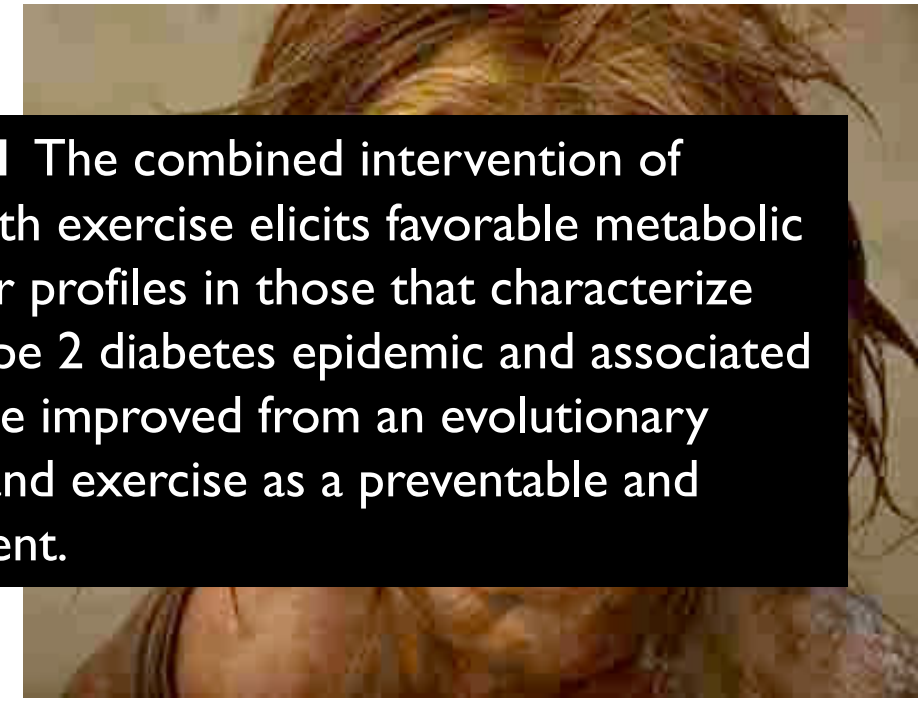
Author Affiliations

Abstract

For nearly 6 million years, the ability to store dietary energy for lat
served humans well during food scarce periods. In our current wor
consumption; overweight and obesity are linked to more deaths w
underweight, with 1.9 billion adults classified as overweight and o
million obese (World Health Organization, 2014). This puts those i
increased risk for chronic diseases, such as cardiovascular disease
syndrome, type 2 diabetes (T2D), nonalcoholic fatty liver disease,
dementia, and some cancers. This trend has had devastating effec
health, reductions in quality of life, and health system resources.
slow the pandemic of obesity and chronic disease is to look to our
past for clues of the changing behaviors contributing to the emerg
'diseases of civilization'. One theory is that agricultural and techno
have introduced pressures (i.e. diet and activity changes) quicker t
ability to respond, causing a mismatch between our systems and t
Over the past 10,000 years, we have had profound changes in feed
behavior which have left an imprint on the human genome.

PURPOSE The purpose of this study was to investigate the health effects of diet and exercise patterns that more closely resemble those of our evolutionary past in individuals characterized as having Metabolic Syndrome (MetS).

METHODS Subjects (N=4) were instructed to consume a diet consisting of unprocessed lean meat, fish, eggs, leafy and cruciferous vegetables, root vegetables, fruit, and nuts and devoid of cereal grains, dairy, beans, legumes, refined fats, bakery items, soft drinks, beer, extra salt and sugar. Foods such as nuts, dried fruit, potatoes (<1 medium-sized per day) and wine (<1 glass per day) were recommended in limited amounts. Carbohydrate restriction was set at <50gCHO with emphasis on fat intake for replacement. Subjects also participated in high intensity interval training (HIIT), which included a 3-min warm-up, 10 × 60 s cycling intervals interspersed with 60s of active recovery, and a 3-min cool-down for 4 total weeks.

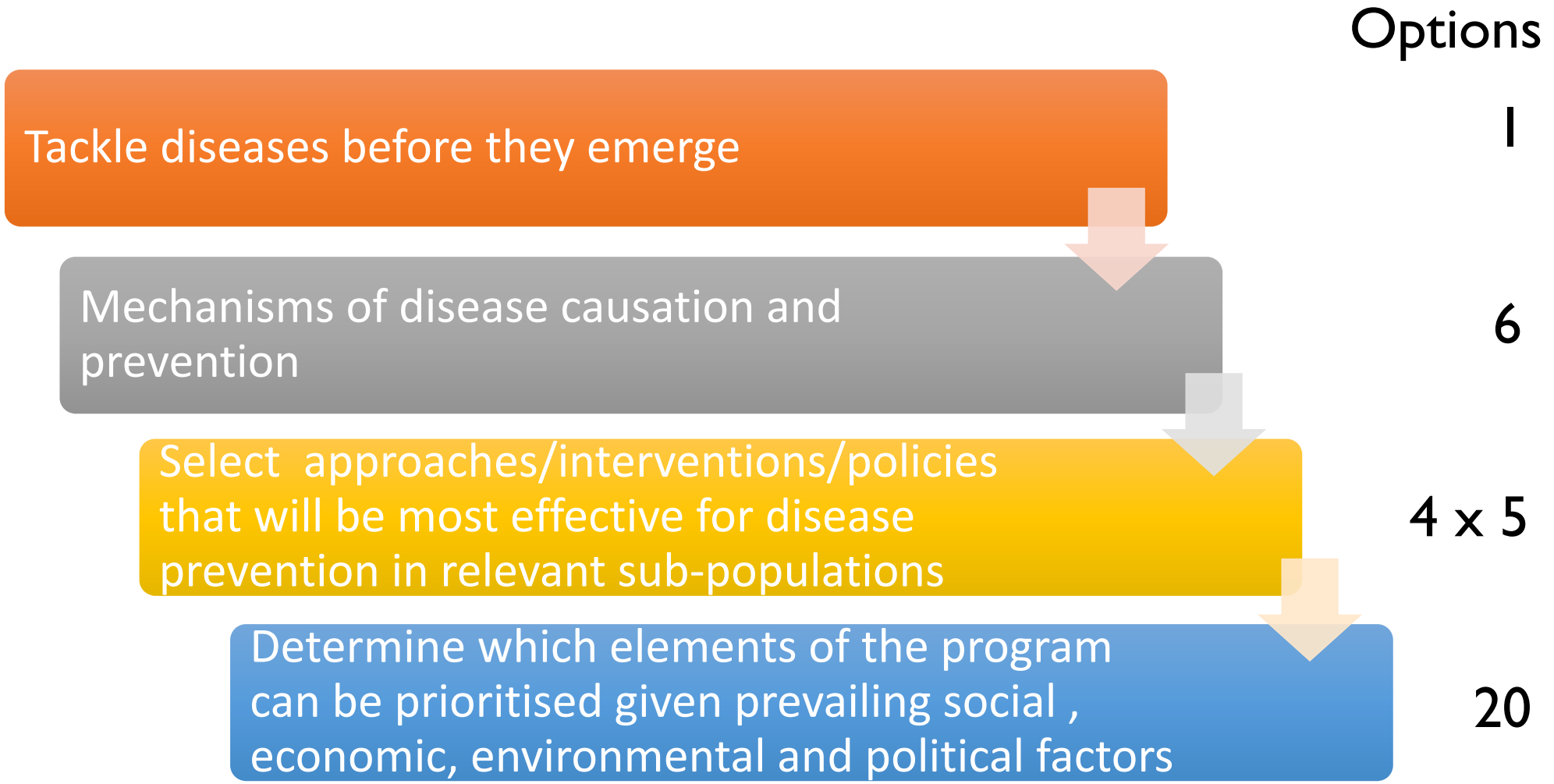


CONCLUSION The combined intervention of paleolithic diet with exercise elicits favorable metabolic and cardiovascular profiles in those that characterize with MetS. The type 2 diabetes epidemic and associated risk factors may be improved from an evolutionary approach in diet and exercise as a preventable and reversible treatment.

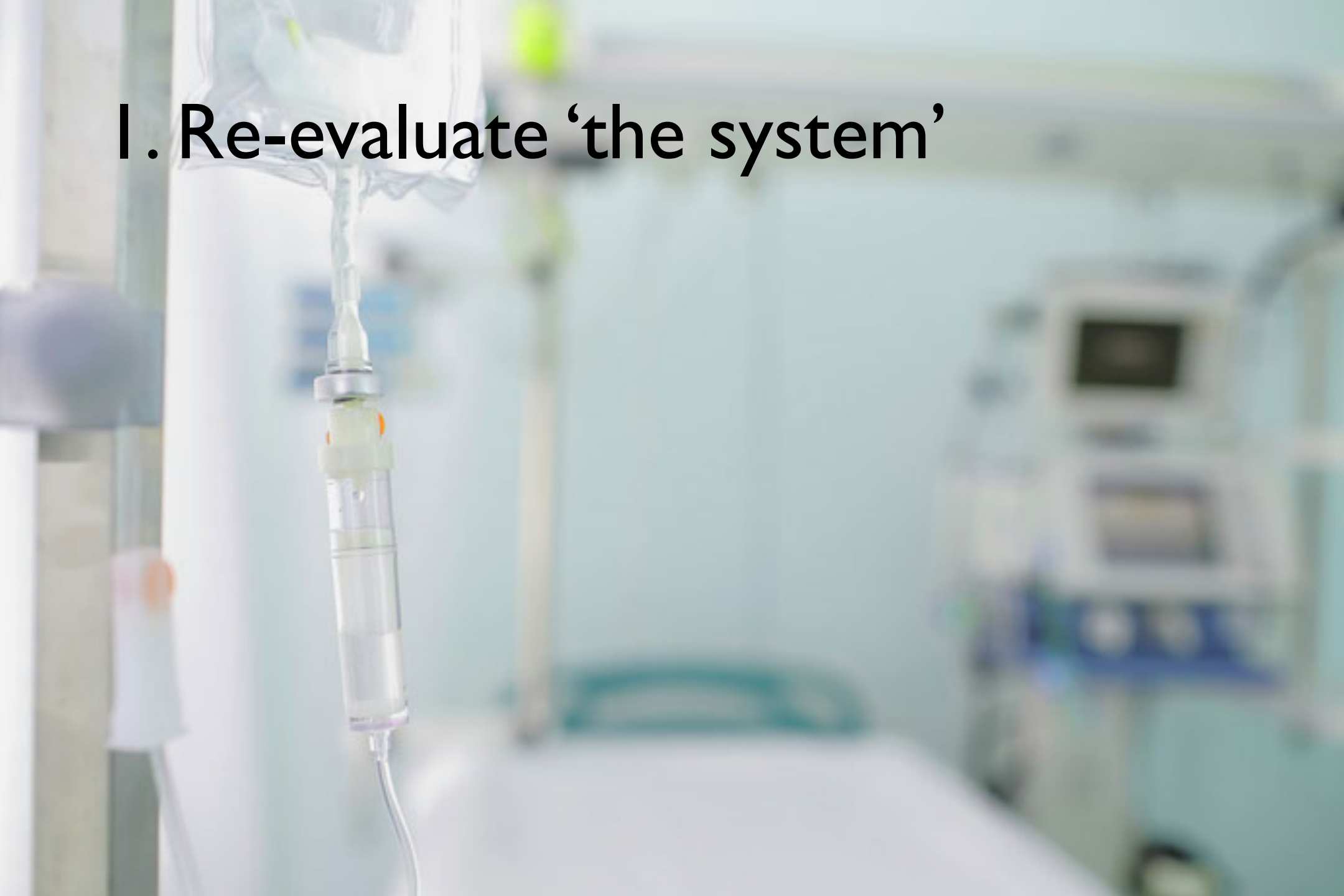

• Background
• Experience
• Belief system
• Science


Social
Sustainable
health &
care system
Environment
Economic

A scenario for one disease (e.g. T2D)



How do we reduce uncertainty over how best to create a sustainable system for managing and optimising human health?



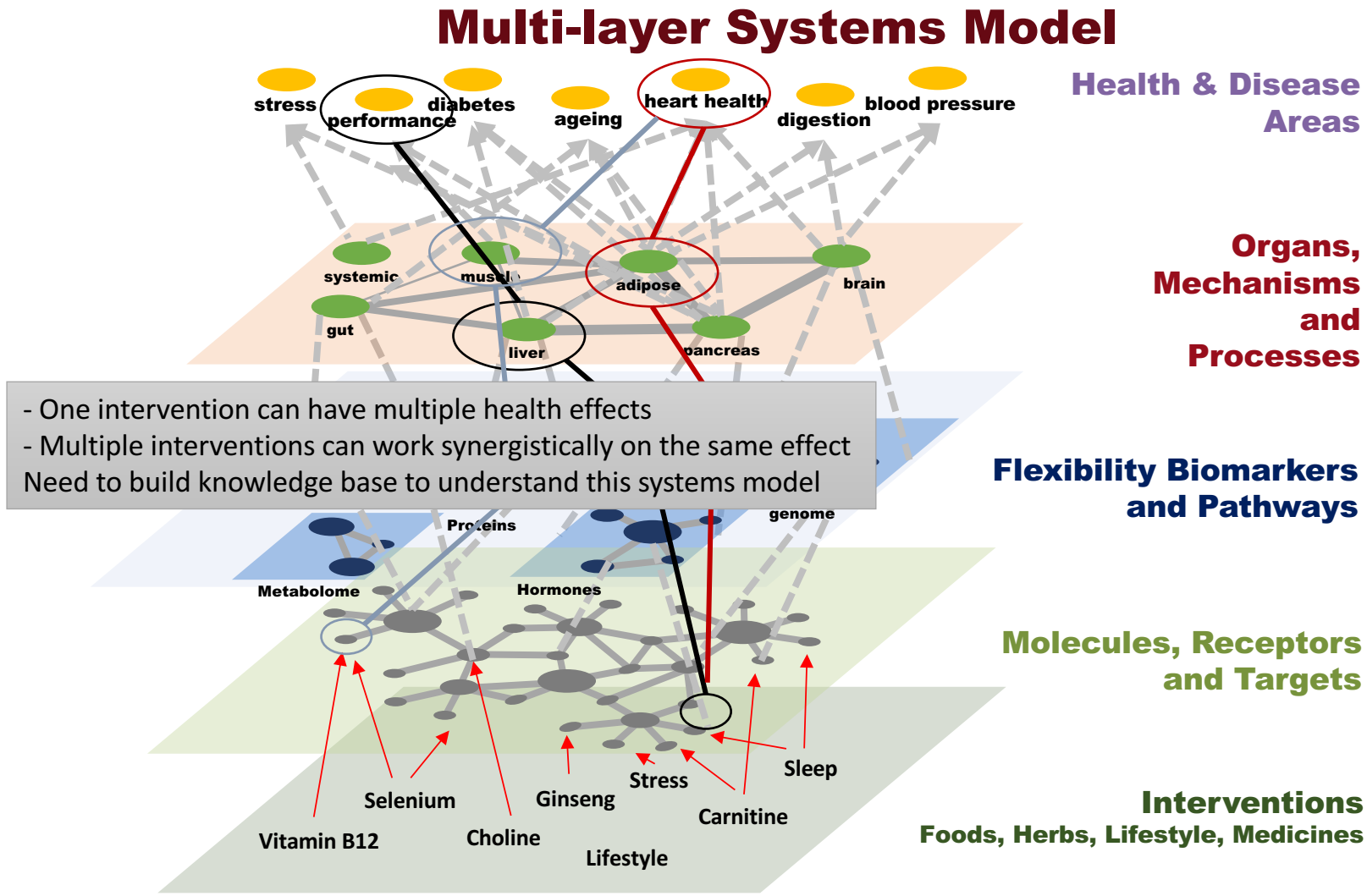
1. Re-evaluate ‘the system’

2. Re-evaluate ‘health’ and ‘care’

3. Re-evaluate the concept of ‘patient’

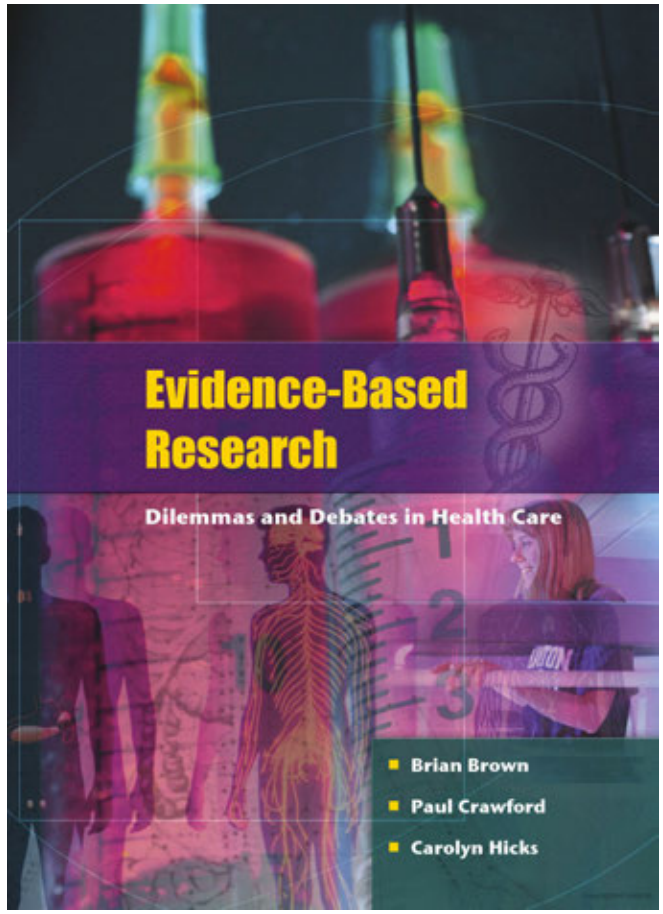
4. Re-evaluate the lens through which we view human/ environmental interactions

5. Re-evaluate multi-layered system of disease causation and perpetuation



Courtesy: van Ommen, B: TNO, Netherlands.

6. Re-evaluate the scientific methods we use to select 'effectiveness' and healthcare decision-making



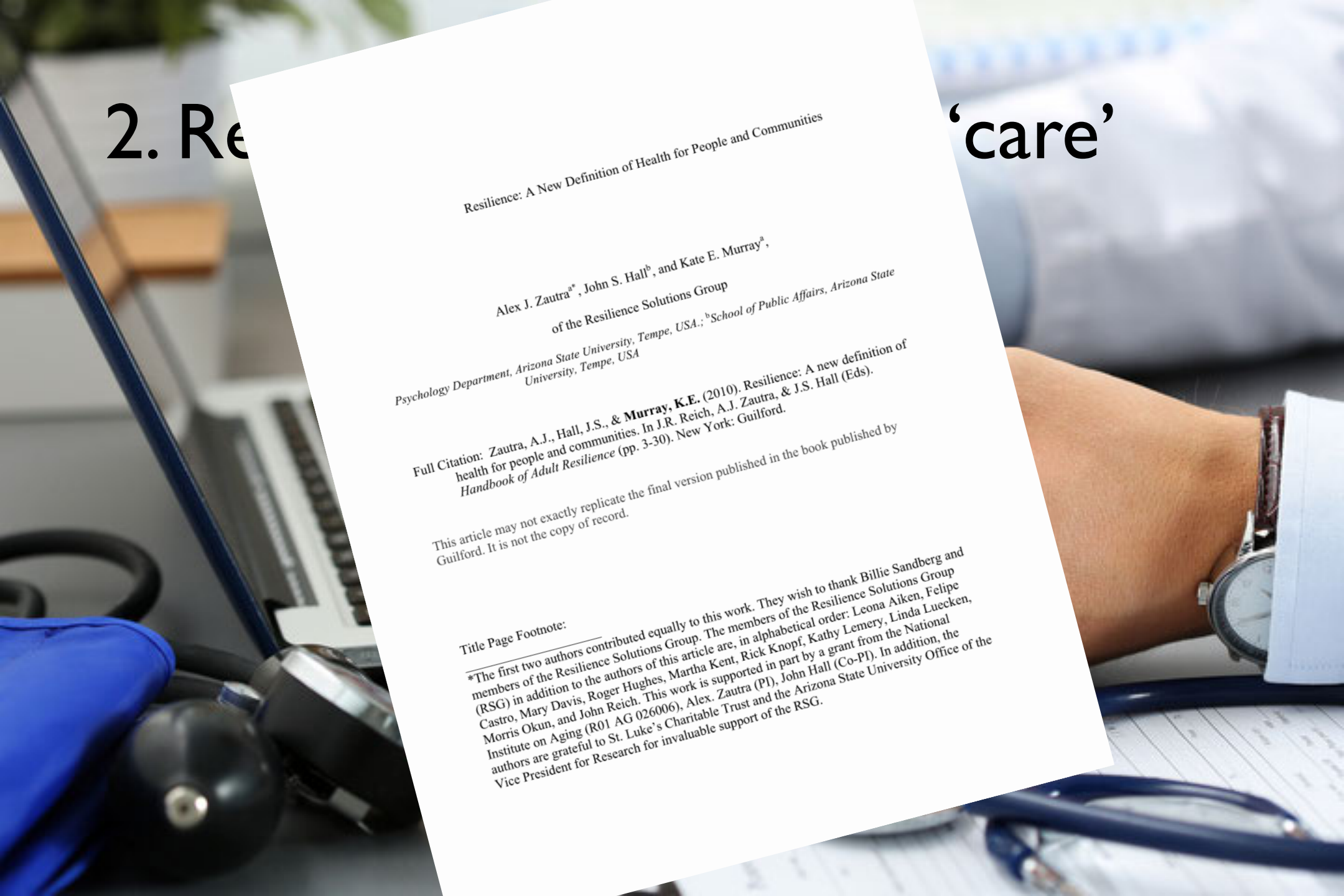
Brian Brown, Paul Crawford, Carolyn Hicks
Open University Press, 2003

7. Re-evaluate our priorities and desired outcomes

8. Re-evaluate our society's respect for human dignity, freedom and democracy

1. Re-evaluate ‘the system’

2. Re ‘care’



Resilience: A New Definition of Health for People and Communities

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of the Resilience Solutions Group

Psychology Department, Arizona State University, Tempe, USA.; [b]School of Public Affairs, Arizona State University, Tempe, USA

Full Citation: Zautra, A.J., Hall, J.S., & **Murray, K.E.** (2010). Resilience: A new definition of health for people and communities. In J.R. Reich, A.J. Zautra, & J.S. Hall (Eds). *Handbook of Adult Resilience* (pp. 3-30). New York: Guilford.

Title Page Footnote:

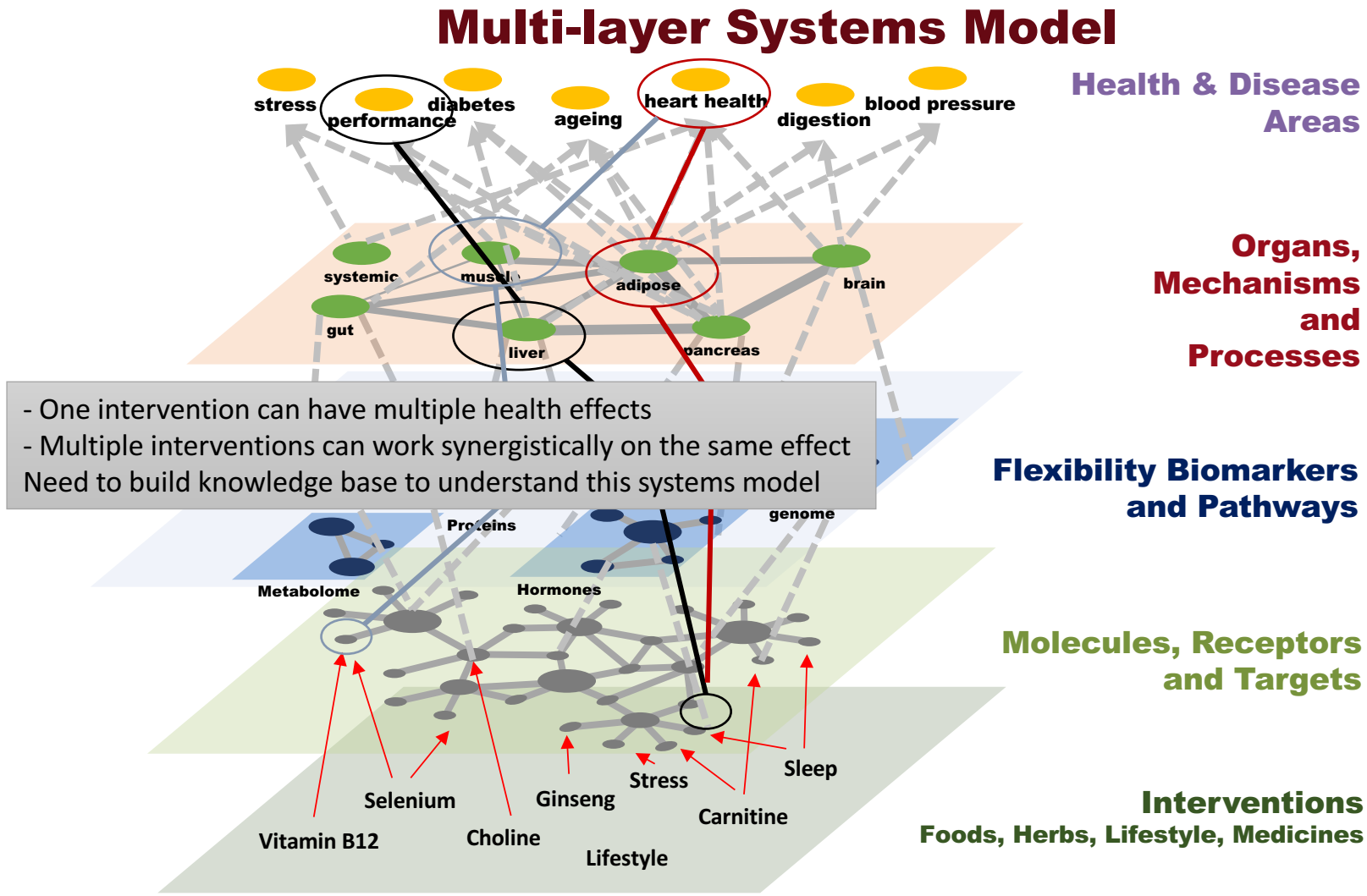
*The first two authors contributed equally to this work. They wish to thank Billie Sandberg and members of the Resilience Solutions Group. The members of the Resilience Solutions Group (RSG) in addition to the authors of this article are, in alphabetical order: Leona Aiken, Felipe Castro, Mary Davis, Roger Hughes, Martha Kent, Rick Knopf, Kathy Lemery, Linda Luecken, Morris Okun, and John Reich. This work is supported in part by a grant from the National Institute on Aging (R01 AG 026006), Alex. Zautra (PI), John Hall (Co-PI). In addition, the authors are grateful to St. Luke’s Charitable Trust and the Arizona State University Office of the Vice President for Research for invaluable support of the RSG.

3. Re-evaluate the concept of ‘patient’

4. Re-evaluate the lens through which we view human/ environmental interactions

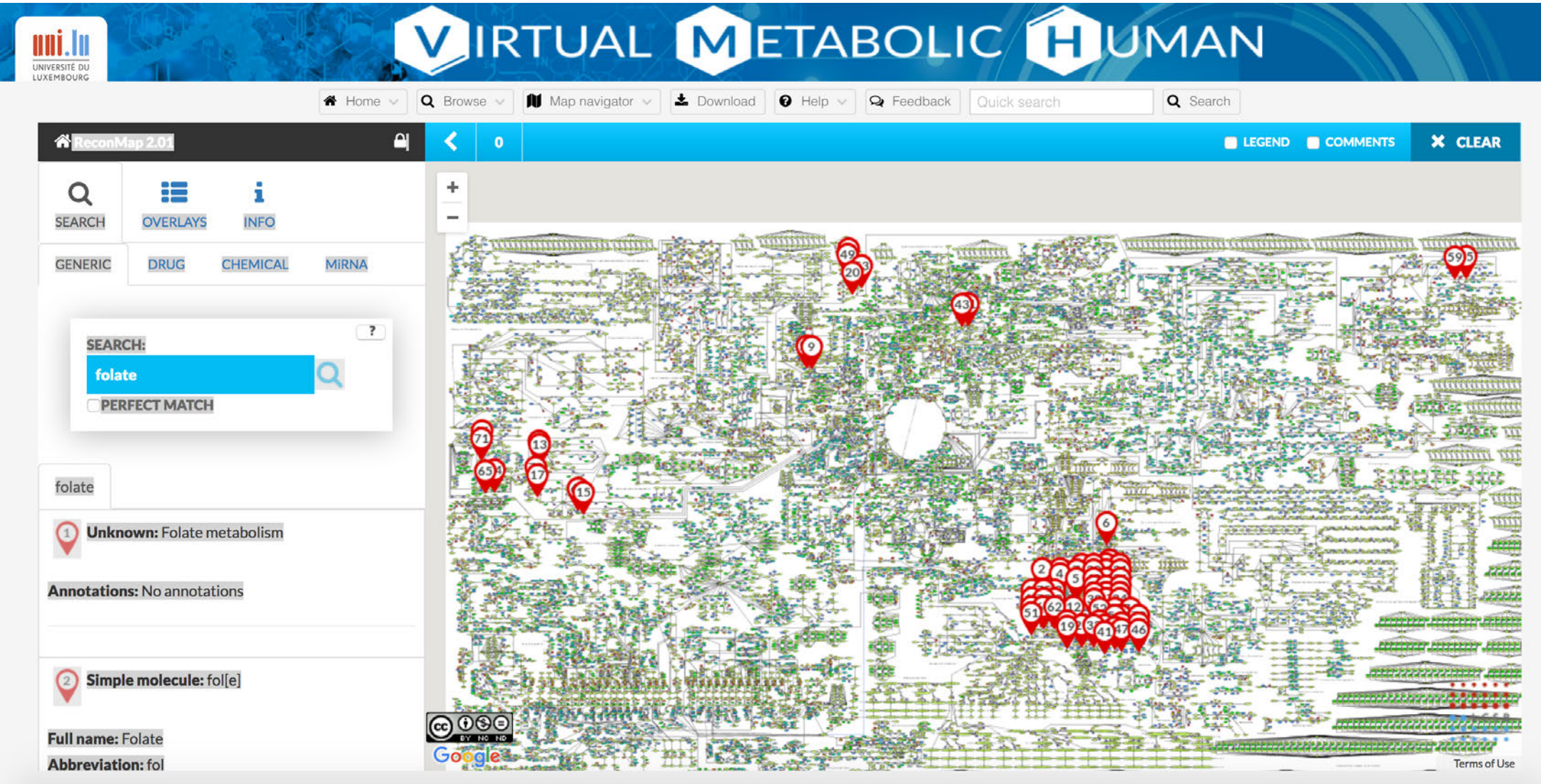
Ecology

5. Re-evaluate multi-layered system of disease causation and perpetuation



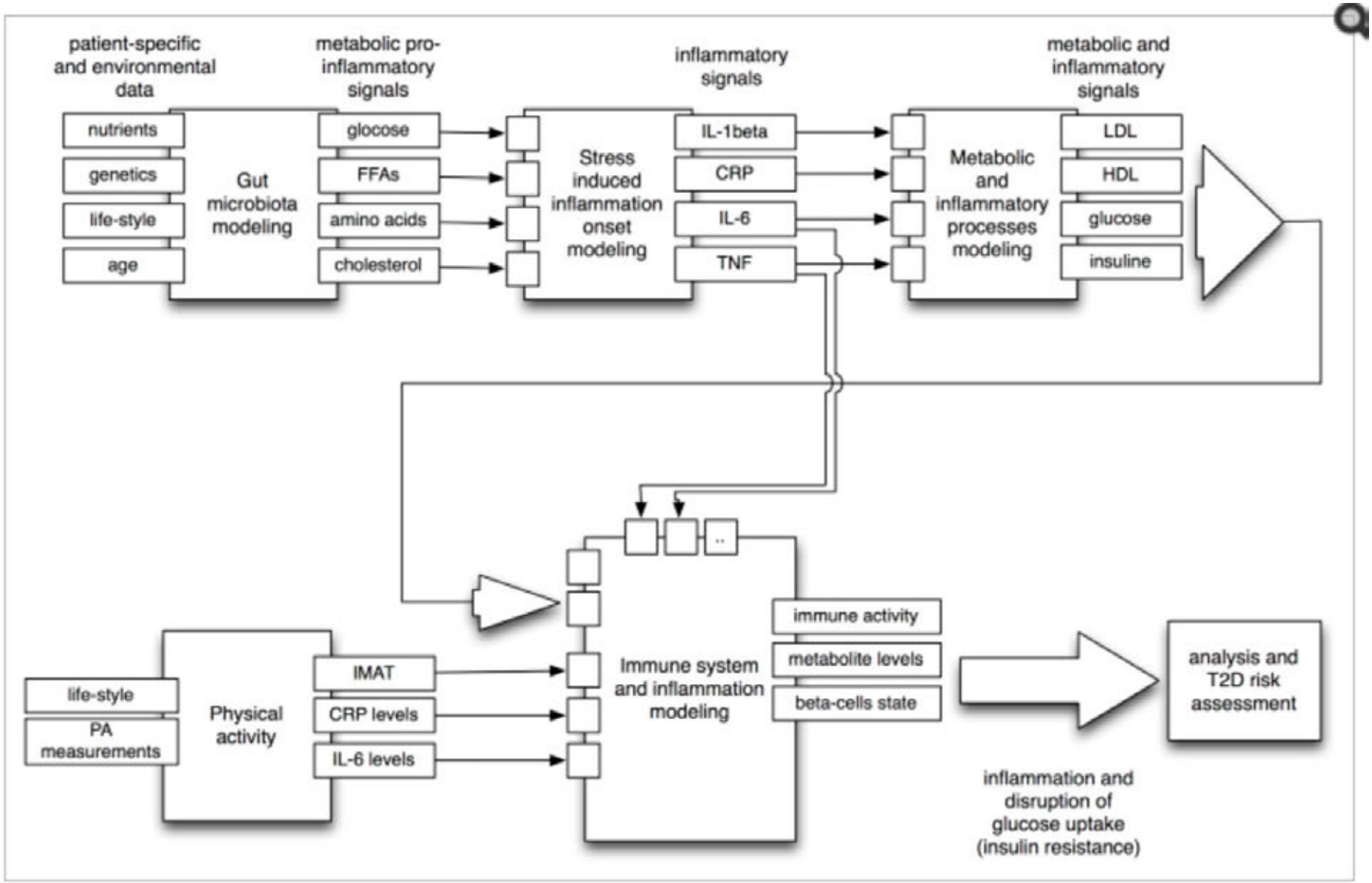
Courtesy: van Ommen, B: TNO, Netherlands.

Human metabolism: 135 + metabolic pathways, 7439 reactions, 2626 metabolites



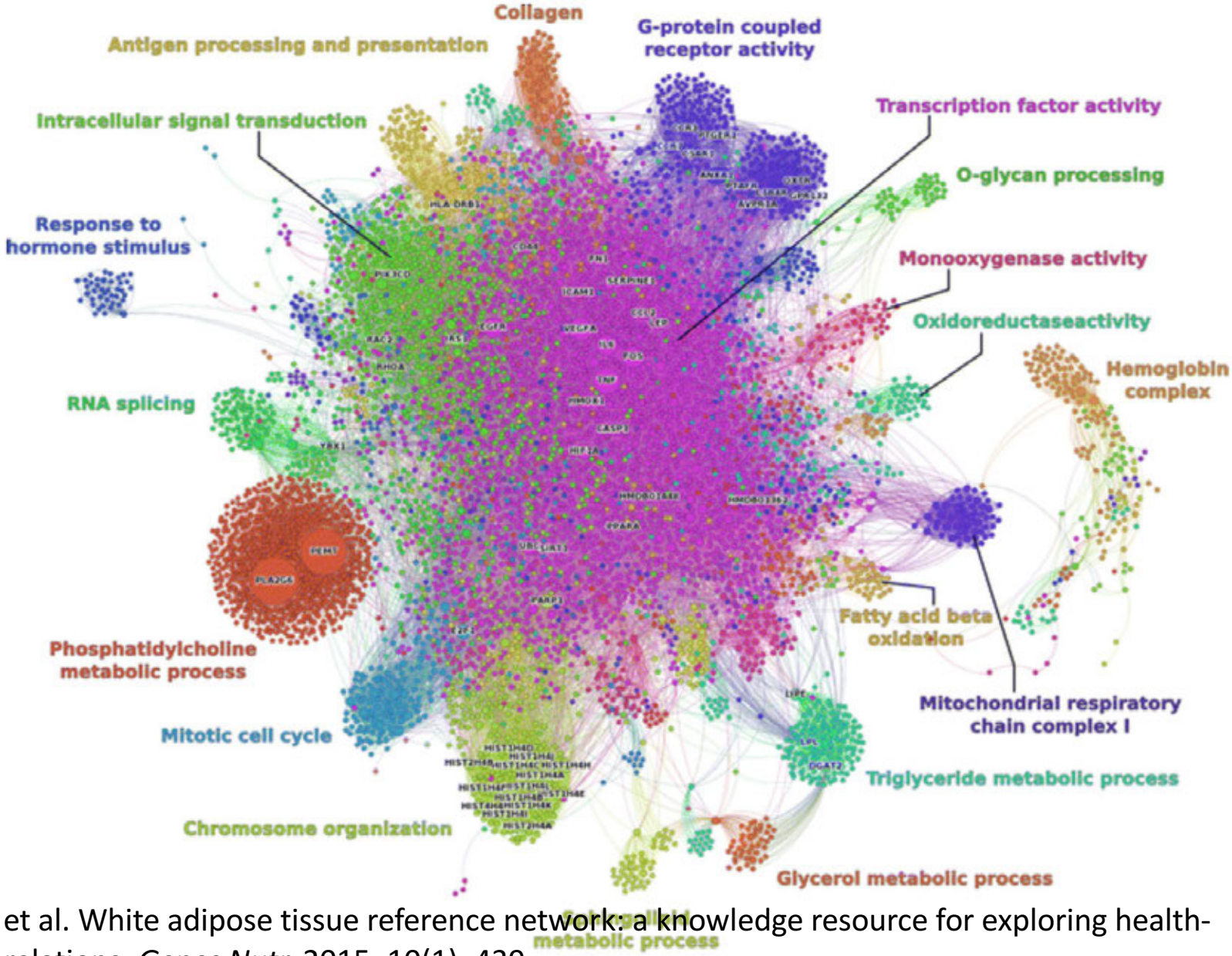
http://vmh.uni.lu/#mapnavigator

Simplified systemic view of the models to be developed within MISSION-T2D and the interdependencies between them



Castiglione F The onset of type 2 diabetes: proposal for a multi-scale model. *JMIR Res Protoc.* 2013; 2(2): e44.

Visualization of the white adipose tissue health reference network with disease-associated gene sets



Kelder T et al. White adipose tissue reference network: a knowledge resource for exploring health-relevant relations. *Genes Nutr.* 2015; 10(1): 439.

Chronic diseases linked to xenobiotic exposure: Comparative Toxicogenomics Database [CTD] [*www.ctdbase.org*])

ctd *Illuminating how chemicals affect human health.*

Comparative Toxicogenomics Database

Home | Search | Analyze | Download | Help

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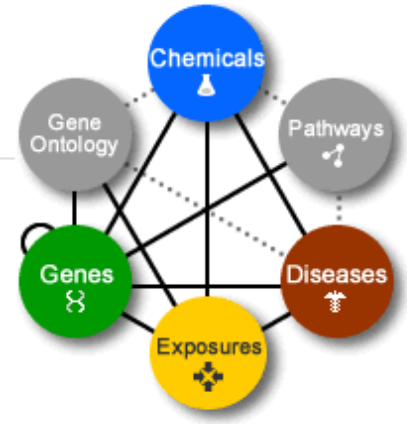
CTD is a robust, publicly available database that aims to advance understanding about how environmental exposures affect human health. *More...*



Discover.

1. What human diseases are associated with a gene/protein? (Example)
2. What human diseases are associated with a chemical? (Example)
3. What genes/proteins interact with a chemical? (Example)
4. What chemicals interact with a gene/protein? (Example)
5. What references report a chemical–gene/protein interaction? (Example)
6. What cellular functions (GO terms) are affected by a chemical? (Example)

News

- *May, 2017*
  Enhanced exposure science search features! Exposure Details Exposure Studies
- *June 8, 2017*
  New data available!
- *All changes...*

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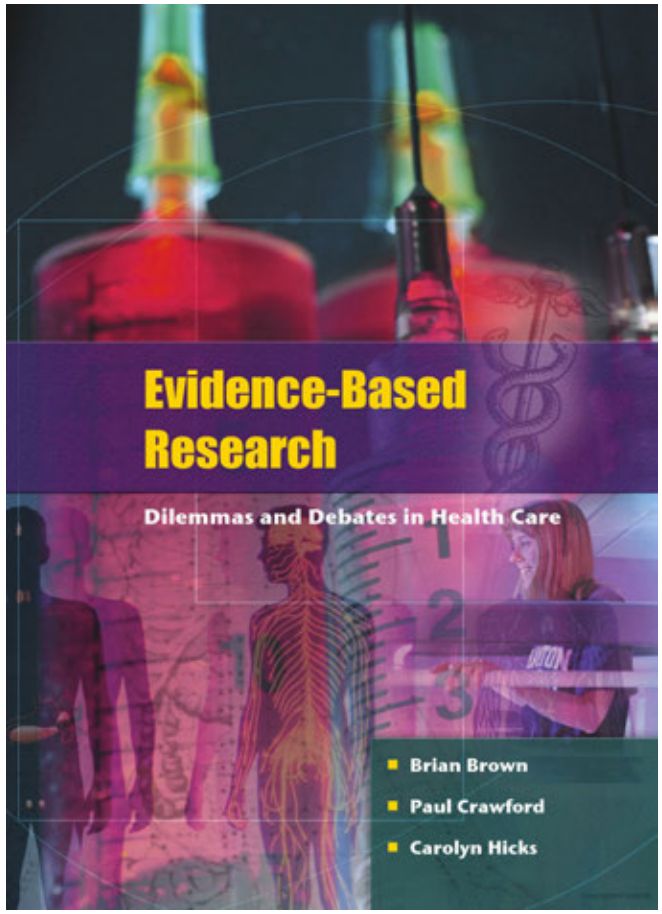
Comparative Toxicogenomics Database [CTD] [*www.ctdbase.org*])

CTD chemical category	Top interacting genes	Examples of strongly inferred chemical/human chronic disease relationships [no. genes associated]
Amino acids, peptides, and proteins	CASP3, TNF, GSTP1, IL6, CXCL8, IL1B, MAPK3, ABCB1, MAPK1, HMOX1	Glutathione/prostatic neoplasms [74 genes] Bleomycin/pulmonary fibrosis [35 genes] Cyclosporine/obesity [96]
Biological factors	TNF, IL6, IL1B, NOS2, PTGS2, IFNG, HMOX1, RELA, CXCL8, MAPK3	Lipopolysaccharides/inflammation [79 genes] Mycotoxins/inflammation [15 genes] Aflatoxins/liver neoplasms [2 genes]
Carbohydrates	TNF, NOS2, IL1B, IL6, PTGS2, INS, RELA, IFNG, CASP3, NFKBIA	Lipopolysaccharides/liver cirrhosis [117 genes] Fructose/diabetes mellitus [46 genes] Glucose/carcinoma [59 genes]
Chemical actions and uses	MGEA5, CYP19A1, TNF, IL1B, AR, CASP3, IL6, MAPK1, ACHE, ESR1	Estrogens/carcinoma (hepatocellular) [36 genes] Air pollutants/breast neoplasms [58 genes] Water pollutant chemicals/breast neoplasms [51 genes] Pesticides/prostatic neoplasms [51 genes] Adjuvants (immunologic)/inflammation [12 genes]
Complex mixtures	TNF, IL6, CXCL8, IL1B, NFE2L2, PTGS2, CYP1A1, HMOX1, NOS2, CAT	Tobacco smoke pollution/stomach neoplasms [102 genes] Smoke/breast neoplasms [101 genes] Particulate matter [lung neoplasms] [79 genes] Chinese herbal drugs/carcinoma (hepatocellular) [55 genes] Vehicle emissions/breast neoplasms [250 genes] Petroleum/prostatic neoplasms [26 genes] Particulate matter/autoimmune diseases [18 genes]
Enzymes and coenzymes	POR, SLC5A6, AKR1B8, CAT, PPARA, CASP3, GAPDH, CYP3A4, NQO1, NQO2	NAD/obesity [8 genes] Thioctic acid/hypertension [41 genes] Leucovorin/heart diseases [2 genes]

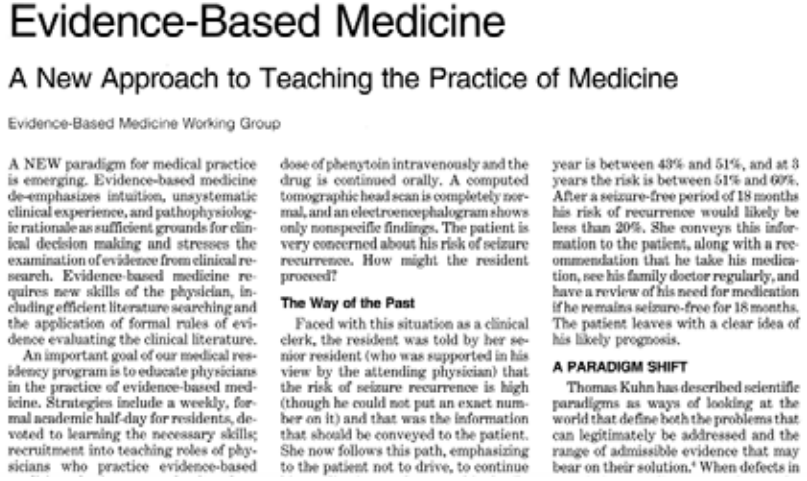
6. Re-evaluate the scientific methods we use to select 'effectiveness' and healthcare decision-making



E.g.

- Case controls from SMAs vs conventional consultations
- Comparative effectiveness Research
- Big data

6. Re-evaluate the scientific methods we use to select 'effectiveness' and healthcare decision-making



Evidence-Based Medicine

A New Approach to Teaching the Practice of Medicine

Evidence-Based Medicine Working Group

A NEW paradigm for medical practice is emerging. Evidence-based medicine de-emphasizes intuition, unsystematic clinical experience, and pathophysiologic rationale as sufficient grounds for clinical decision making and stresses the examination of evidence from clinical research. Evidence-based medicine requires new skills of the physician, including efficient literature searching and the application of formal rules of evidence evaluating the clinical literature.

An important goal of our medical residency program is to educate physicians in the practice of evidence-based medicine. Strategies include a weekly, formal academic half-day for residents, devoted to learning the necessary skills; recruitment into teaching roles of physicians who practice evidence-based

dose of phenytoin intravenously and the drug is continued orally. A computed tomographic head scan is completely normal, and an electroencephalogram shows only nonspecific findings. The patient is very concerned about his risk of seizure recurrence. How might the resident proceed?

The Way of the Past

Faced with this situation as a clinical clerk, the resident was told by her senior resident (who was supported in his view by the attending physician) that the risk of seizure recurrence is high (though he could not put an exact number on it) and that was the information that should be conveyed to the patient. She now follows this path, emphasizing to the patient not to drive, to continue

year is between 43% and 51%, and at 3 years the risk is between 51% and 60%. After a seizure-free period of 18 months his risk of recurrence would likely be less than 20%. She conveys this information to the patient, along with a recommendation that he take his medication, see his family doctor regularly, and have a review of his need for medication if he remains seizure-free for 18 months. The patient leaves with a clear idea of his likely prognosis.

A PARADIGM SHIFT

Thomas Kuhn has described scientific paradigms as ways of looking at the world that define both the problems that can legitimately be addressed and the range of admissible evidence that may bear on their solution.[4] When defects in

Evidence-Based Medicine Working Group. Evidence-based medicine. A new approach to teaching the practice of medicine. *JAMA.* 1992; 4; 268(17): 2420-5.

ACKD

Advances in Chronic Kidney Disease

National Kidney Foundation

Vol 19, No 1, January 2012

EDITORIAL

We should not dismiss that there are other considerations to contemplate in today's ''modern medicine,'' including the atavistic-sounding patient-centric approach and the use of comparative effectiveness research to guide therapy. The founders of evidence-based medicine, as physicians, comprehended this from the start and appreciated that an evidence foundation is just one component of an evidence-based, patient-centered, decision-making process. There was no intent to eradicate the art of medicine, but to amplify it.

Yee J. Eminence-based medicine: the King is dead. *Adv Chronic Kidney Dis.* 2012; 19(1): 1-2.

7. Re-evaluate our priorities and desired outcomes

8. Re-evalu ety's respect for human nd democracy

Thank you.

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