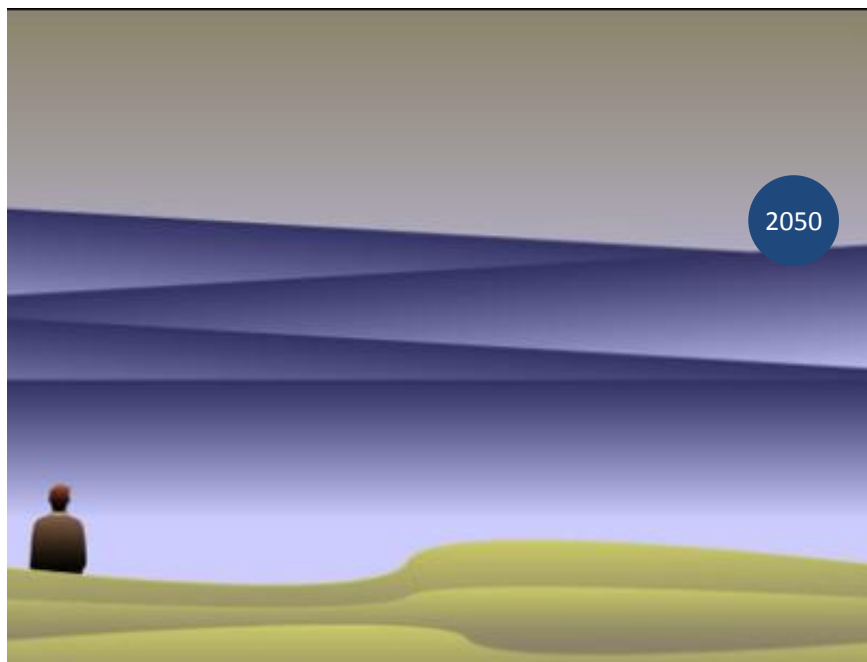


Προς την εξατομικευμένη διαχείριση της υγείας



DNA



3 δισεκατ. γράμματα
3 εκατ. ατομικές διαφορές
(πολυμορφισμοί)

μεταγραφή

RNA



μετάφραση

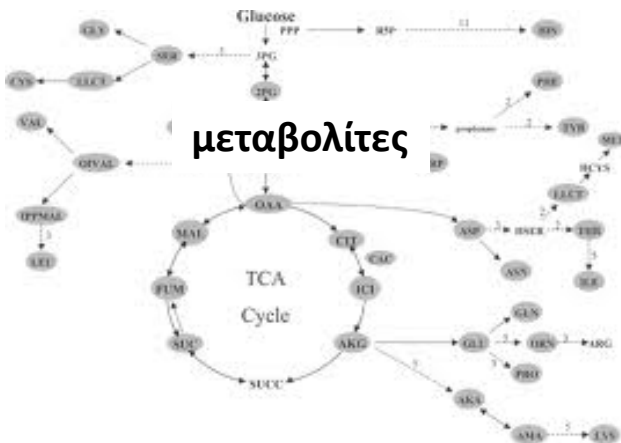
πρωτεΐνες



δεκάδες χιλιάδες

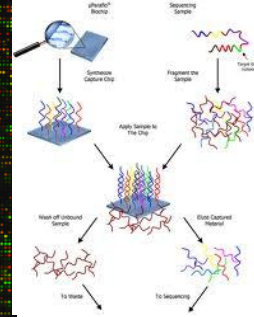
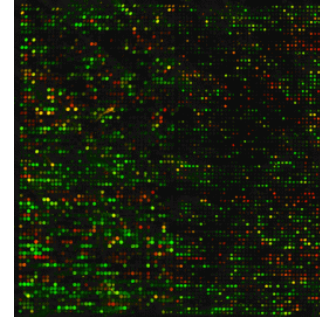
δεκάδες χιλιάδες

μεταβολίτες

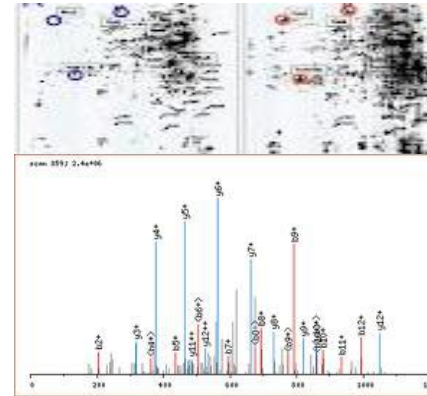


χιλιάδες

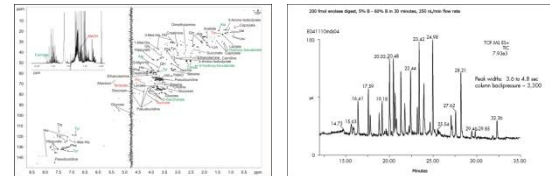
Τεχνολογίες ολιστικής ανάλυσης του βιολογικού υποβάθρου ("omics")



γονιδιωματική (genomics)
επιγενωμική (epigenomics)
μεταγραφωμική (transcriptomics)



πρωτεωμική (proteomics)

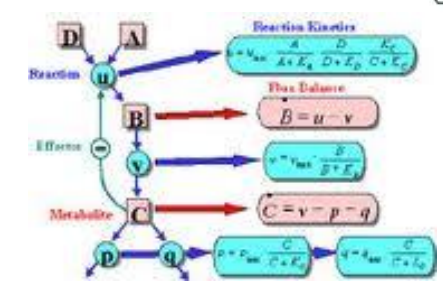
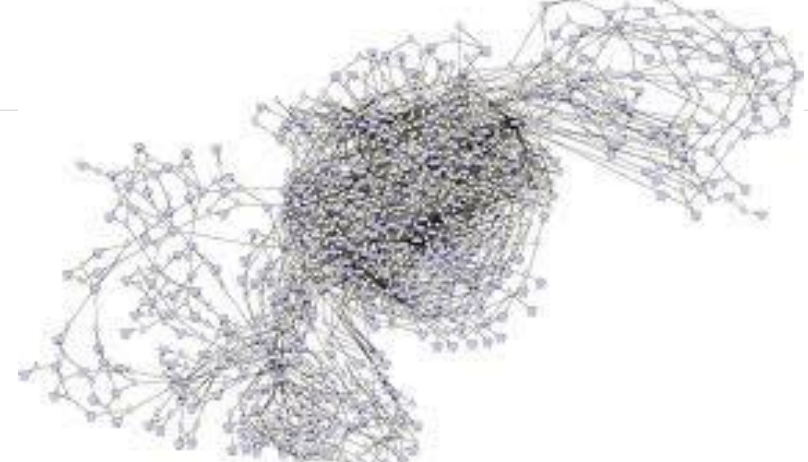
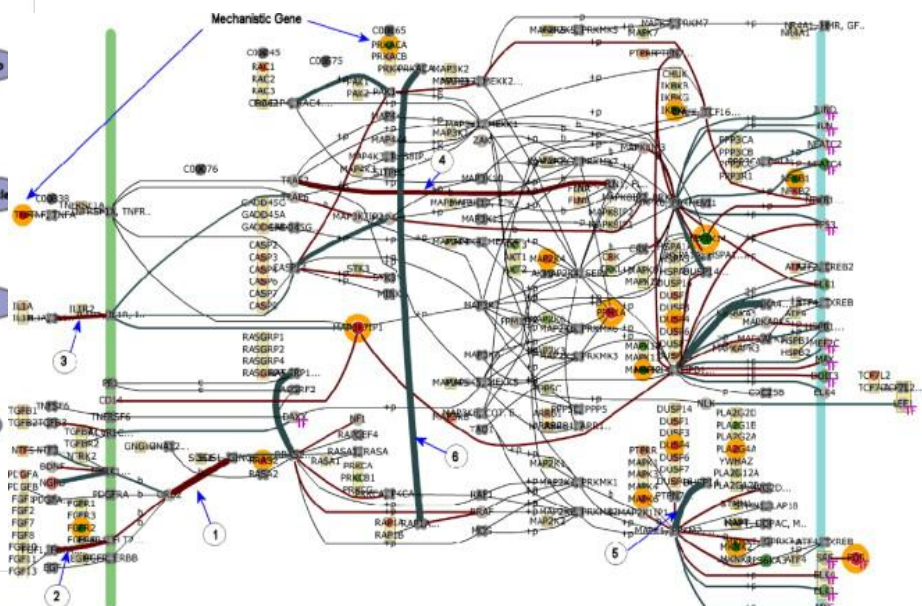
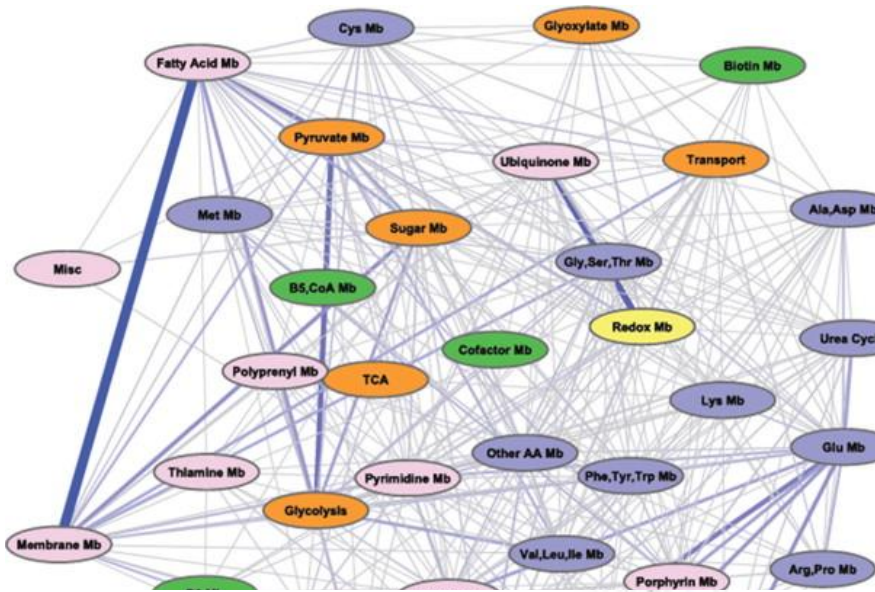


μεταβολωμική (metabolomics)

...και πολλά ακόμα omics...

Συστημική βιολογία

Μαθηματική περιγραφή σύνθετων βιολογικών συστημάτων



Βελτιωμένες δυνατότητες ακριβούς εκτίμησης των πιθανοτήτων εξέλιξης της υγείας και προληπτικών παρεμβάσεων

EVERY BITE YOU TAKE

If a camera snaps everything you eat, you can't lie about it later. That's why scientists are building high-tech gadgets to measure the human 'exposome'.

BY BRENDAN BORRELL

A decade ago, as part of a study on diet, psychologist Tom Baranowski was asked to recall everything he had eaten the previous day. A chicken dinner, he said confidently, remembering that he had prepared it for himself and his wife Janice. The thing was, he hadn't made chicken that night. It was only later that he realized he'd treated himself to a hamburger.

If Baranowski, who studies children's diets at Baylor College of Medicine in Houston, Texas, was an unlikely candidate for making such a mistake, consider how abysmal the dietary memories of everyone else must be. By observing his study subjects one day and following up the next, Baranowski has found that children routinely forget about 15% of the foods they have eaten, and more than 30% of the foods they do recall turn out to be figments of their imagination. Adults show similar patterns. "The errors of dietary assessment are overwhelming," says Baranowski.

These mistakes are more than a reminder of the human memory's fallibility: they threaten to undermine the foundations of modern medical epidemiology. In this field, researchers make associations between past events and experiences, and later ones such as the emergence of cancer or other diseases. But if the initial records are inaccurate, these associations can be weak, misleading or plain wrong. Although the problem is most jarring in studies of diet, it also infects investigations of exercise, stress, pollution or smoking — basically, anything that relies on people reporting their own

Portion truths: photos help people recall what they ate.

EMERGING SCIENCE FOR ENVIRONMENTAL HEALTH DECISIONS

THE NEWSLETTER OF THE STANDING COMMITTEE ON USE OF EMERGING SCIENCE FOR ENVIRONMENTAL HEALTH DECISIONS

JUNE 2010

The Exposome: A Powerful Approach for Evaluating Environmental Exposures and Their Influences on Human Disease

On February 25–26, 2010, the National Academies Standing Committee on Use of Emerging Science for Environmental Health Decisions held a public workshop on the exposome, a characterization of a

CDC Home | Features | Log In | February 2011

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index for All CDC Topics

Workplace Safety & Health Topics

- Workplace Safety and Health Topics
- Industries & Occupations
- Hazards & Exposures
- Exposome and Exposomics**
- Diseases & Injuries
- Safety & Prevention
- Chemicals
- Emergency

[NIOSH](#) > [Workplace Safety and Health Topics](#) > [Hazards & Exposures](#)

[Recommend](#) 23
 [Tweet](#) 24
 [Share](#)

EXPOSOME AND EXPOSOMICS

Overview

What is the exposome?

Success in mapping the human genome has fostered the complementary concept of the "exposome". The exposome can be defined as the

Published by Oxford University Press on behalf of the International Epidemiological Association
© The Author 2012; all rights reserved. Advance Access publication 31 January 2012

International Journal of Epidemiology 2012;41:24–32
doi:10.1093/ije/dyr236

REVIEW

The exposome: from concept to utility

Christopher Paul Wild

International Agency for Research on Cancer, 150 cours Albert Thomas, 69008 Lyon, France. E-mail: director@iarc.fr

Accepted 22 December 2011

Keywords Exposome, exposure assessment, biomarkers, cancer epidemiology

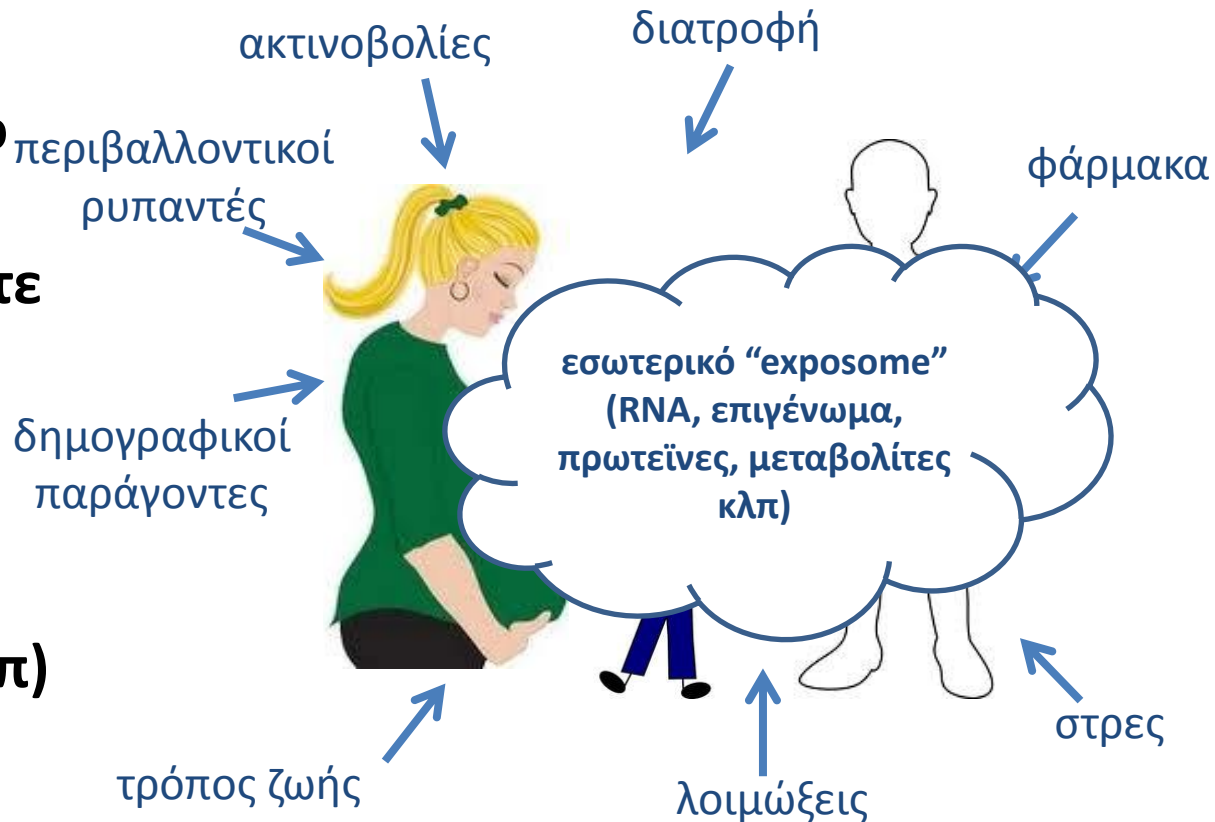
Introduction

The concept of the exposome was developed to draw attention to the critical need for more complete environmental exposure assessment in epidemiological studies.^{1–4} environment is defined in this context in [Safety and](#)

death. Therefore, it requires consideration of both the nature of those exposures and their changes over time. For ease of description, three broad categories of non-genetic exposures may be considered: internal, specific external and general external (Figure 1). First, the exposome comprises processes internal to

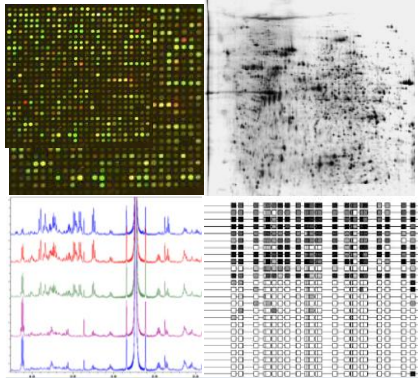
Exposome & Exposomics

Το σύνολο των κάθε είδους «εκθέσεων», από την σύλληψη μέχρι σήμερα, από οπουδήποτε και αν προέρχονται (περιβάλλον, διατροφή, λοιμώξεις, τρόπος ζωής, κοινωνικο-ψυχολογικές συνθήκες διαβίωσης, κλπ)



Τρόποι μέτρησης του exposome
βιοδείκτες – βιολογικά προφίλ
ανιχνευτές (sensors)
κινητά τηλέφωνα
???

Όραμα εφαρμογών ολιστικών τεχνολογιών στην υγεία το 2050



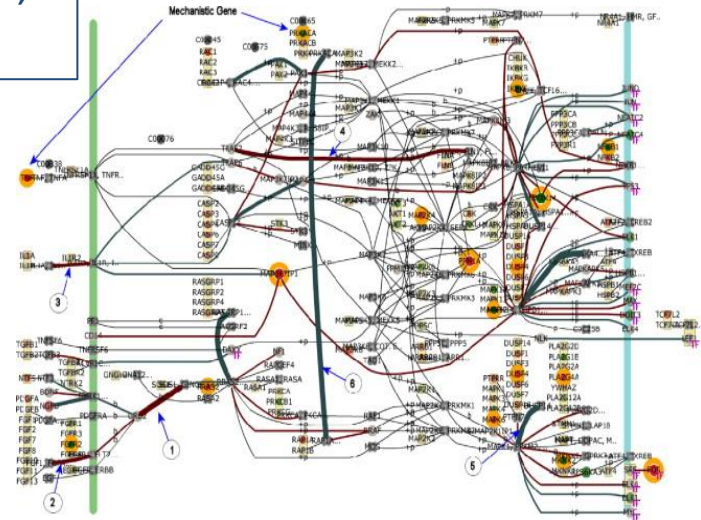
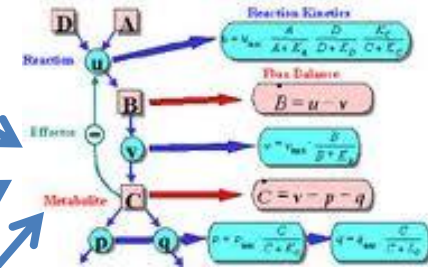
γρήγορη, φθηνή ολιστική ανάλυση βιολογικών δειγμάτων



βιολογικό υπόβαθρο

εσωτερικό exposome

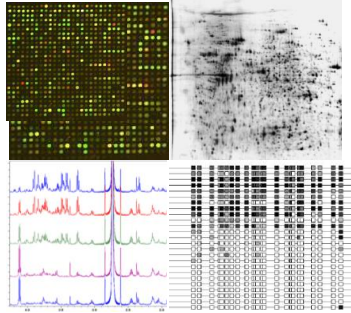
εξωτερικό exposome από sensors, monitors, κινητά τηλ. κλπ



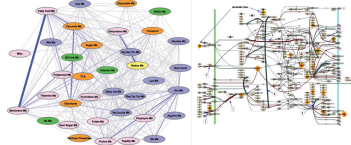
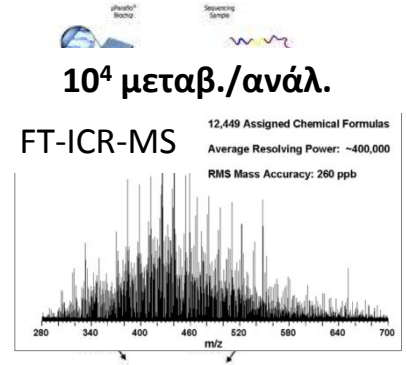
διαχείριση υγείας



Όραμα ή όνειρο



ολιστικές αναλύσεις



συστημική βιολογία
σύνθετων β

