



Taboureau and Audouze:

Human Environmental Disease Network: A Computational Model to Assess Toxicology of Contaminants

Supplementary Data

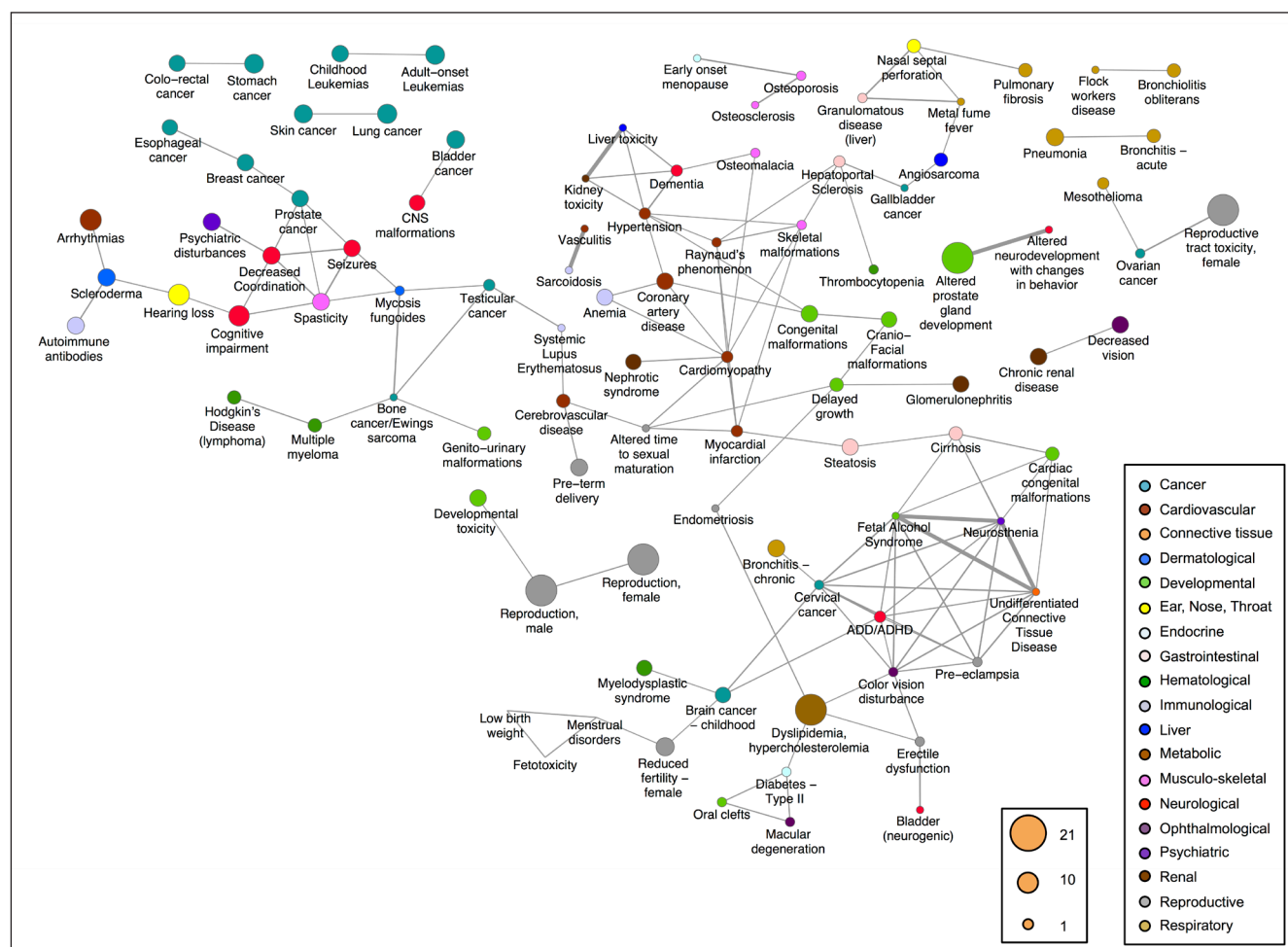


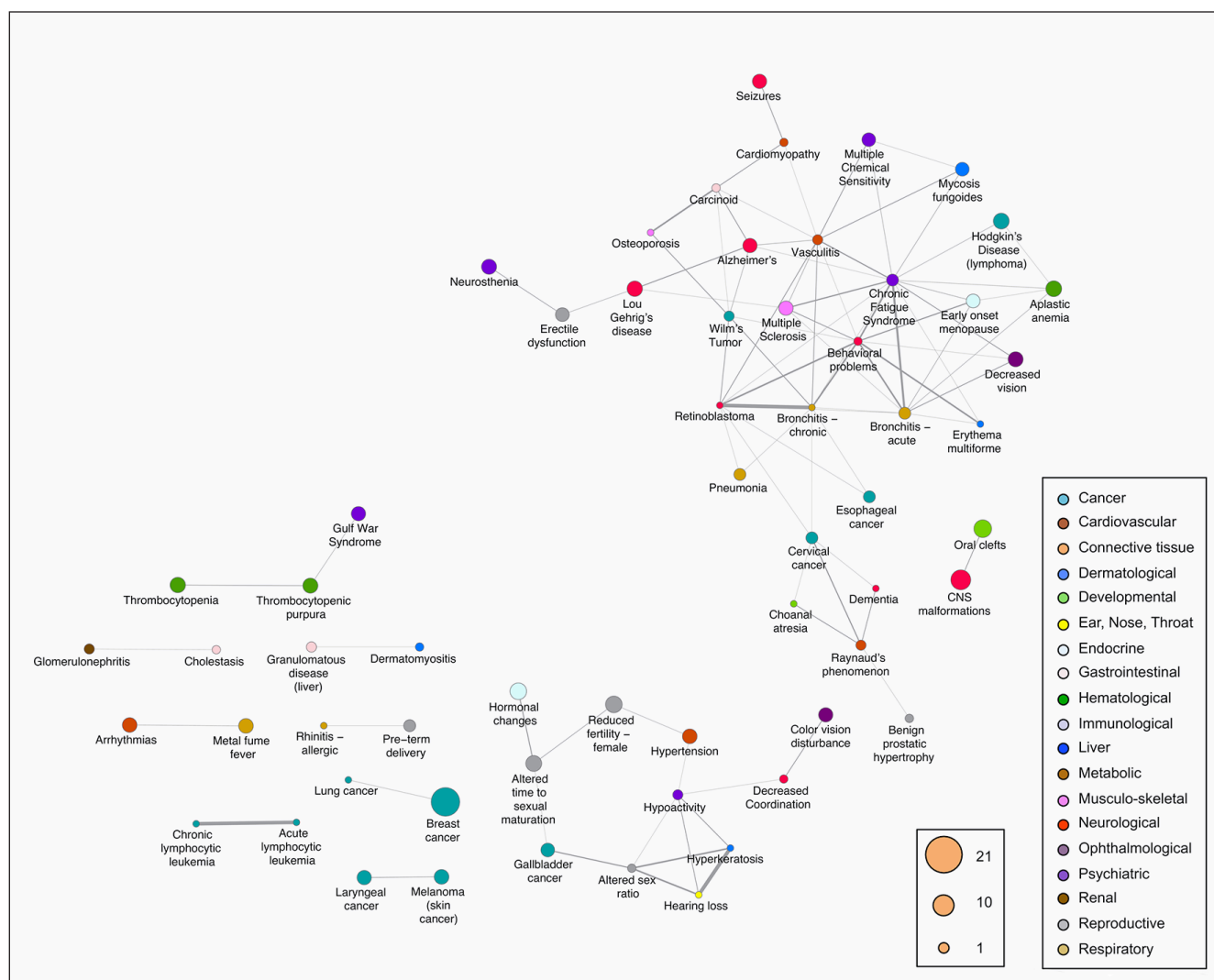
Fig. S1: Representation of the top significant disease-disease associations based on the probabilistic score using the good level of evidence (GE)

Each node corresponds to a unique disease, colored according to the biological systems to which it belongs. The name of the 19 systems is shown on the right. Node's sizes are according to the number of chemicals linked to the disease with a good evidence level. An edge is placed between two diseases if they share at least one chemical within the GE level. The width of a link is proportional to the number of chemicals that are linked to both diseases. Only the top significant associations are shown (based on the calculated score) for clarity of the figure.



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Tab. S1: Disease classification

Diseases are classified into 19 classes according to the classification scheme described in the human disease network (Goh et al., 2007).

Disease name	Disease class
Adrenal cancer	Cancer
Adult-onset Leukemias	Cancer
Bladder cancer	Cancer
Bone cancer/Ewings sarcoma	Cancer
Brain cancer - childhood	Cancer
Brain cancer (adult)	Cancer
Breast cancer	Cancer
Cervical cancer	Cancer
Childhood Leukemias	Cancer
Colo-rectal cancer	Cancer
Esophageal cancer	Cancer
Gallbladder cancer	Cancer
Hepatocellular cancer (Liver cancer)	Cancer
Laryngeal cancer	Cancer
Lung cancer	Cancer
Melanoma (skin cancer)	Cancer
Nasopharyngeal/Sino-Nasal cancer	Cancer
Oral cancer	Cancer
Ovarian cancer	Cancer
Pancreatic cancer	Cancer
Prostate cancer	Cancer
Renal (kidney) cancer	Cancer
Salivary gland cancer	Cancer
Scrotal cancer	Cancer
Skin cancer (non-melanoma)	Cancer
Soft tissue sarcoma	Cancer
Stomach cancer	Cancer
Testicular cancer	Cancer
Thyroid cancer	Cancer
Uterine cancer	Cancer
Vaginal cancer	Cancer
Wilm's Tumor	Cancer
Arrhythmias	Cardiovascular
Cardiomyopathy	Cardiovascular
Cerebrovascular disease (stroke)	Cardiovascular
Coronary artery disease, peripheral vascular disease, atherosclerosis	Cardiovascular
Hypertension (High blood pressure)	Cardiovascular

Disease name	Disease class
Myocardial infarction (Heart attack)	Cardiovascular
Raynaud's phenomenon	Cardiovascular
Vasculitis	Cardiovascular
Undifferentiated Connective Tissue Disease	Connective tissue
Acroosteolysis (vinyl chloride disease)	Dermatological
Alopecia (hair loss)	Dermatological
Chloracne	Dermatological
Contact dermatitis - Allergic	Dermatological
Contact dermatitis - Irritant	Dermatological
Dermatomyositis	Dermatological
Erythema multiforme	Dermatological
Hyperkeratosis/ Hyperpigmentation	Dermatological
Leukoderma (hypopigmentation)	Dermatological
Mycosis fungoides (cutaneous T-cell lymphoma)	Dermatological
Photosensitivity	Dermatological
Scleroderma	Dermatological
Skin ulceration	Dermatological
Altered prostate gland development	Developmental
Cardiac congenital malformations	Developmental
Choanal atresia	Developmental
Congenital malformations - general	Developmental
Cranio- Facial malformations	Developmental
Delayed growth	Developmental
Developmental toxicity, not otherwise specified	Developmental
Fetal Alcohol Syndrome/Fetal solvent syndrome	Developmental
Fetotoxicity (Miscarriage/spontaneous abortion, stillbirth)	Developmental
Genito-urinary malformations (includes male and female)	Developmental
Low birth weight/Small for Gestational Age/Intra-Uterine Growth Retardation	Developmental
Minamata disease	Developmental
Neurodevelopmental toxicity	Developmental
Oral clefts (cleft lip and palate)	Developmental
Hearing loss	Ear, Nose, and Throat
Nasal polyps	Ear, Nose, and Throat



Disease name	Disease class
Nasal septal perforation	Ear, Nose, and Throat
Olfactory alterations (hyposmia, anosmia, dysomias)	Ear, Nose, and Throat
Diabetes - Type I	Endocrine
Diabetes - Type II	Endocrine
Early onset menopause	Endocrine
Hashimoto's (Autoimmune) thyroiditis	Endocrine
Hormonal changes (levels of circulating sex hormones - FSH/LH, Inhibin, and/or estrogens, progesterones, androgens, prolactin)	Endocrine
Menstrual disorders (abnormal bleeding, short cycles, long cycles, irregular cycles, painful periods)	Endocrine
Thyroid disorders - Hypothyroidism	Endocrine
Carcinoid	Gastrointestinal
Cholestasis	Gastrointestinal
Cirrhosis	Gastrointestinal
Granulomatous disease (liver)	Gastrointestinal
Hepatoma	Gastrointestinal
Hepatoportal Sclerosis	Gastrointestinal
Pancreatitis	Gastrointestinal
Steatosis (fatty liver)	Gastrointestinal
Aplastic anemia	Hematological
Hodgkin's Disease (lymphoma)	Hematological
Lymphoma (non-Hodgkin's)	Hematological
Methemoglobinemia	Hematological
Multiple myeloma	Hematological
Myelodysplastic syndrome (pre-leukemia)	Hematological
Porphyria (toxic)	Hematological
Red blood cell damage	Hematological
Thrombocytopenia	Hematological
Thrombocytopenic purpura	Hematological
Anemia (including hemolytic)	Immunological
Autoimmune antibodies (positive ANA, anti-DNA, RF, etc.)	Immunological
Eosinophilia-myalgia syndrome	Immunological
Immune suppression	Immunological
Polymer Fume Fever	Immunological
Sarcoidosis	Immunological
Systemic Lupus Erythematosus	Immunological

Disease name	Disease class
Toxic oil syndrome	Immunological
Angiosarcoma (hepatic)	Liver
Hepatitis	Liver
Liver toxicity	Liver
Dyslipidemia, hypercholesterolemia	Metabolism
Gout	Musculo-skeletal
Multiple Sclerosis	Musculo-skeletal
Osteomalacia	Musculo-skeletal
Osteoporosis	Musculo-skeletal
Osteosclerosis	Musculo-skeletal
Peripheral neuropathy	Musculo-skeletal
Rheumatoid arthritis	Musculo-skeletal
Skeletal malformations	Musculo-skeletal
Spasticity/Myoclonus	Musculo-skeletal
ADD/ADHD, hyperactivity	Neurological
ALS (Lou Gehrig's disease)	Neurological
Altered neurodevelopment with changes in behavior	Neurological
Alzheimer's	Neurological
Behavioral problems	Neurological
Bladder (neurogenic)	Neurological
Central nervous system depression	Neurological
Cerebral palsy	Neurological
Cognitive impairment (includes impaired learning, impaired memory, and decreased attention span)/Mental Retardation/Developmental Delay	Neurological
Decreased Coordination/ Dysequilibrium	Neurological
Dementia	Neurological
Neural tube defects/CNS malformations	Neurological
Neurobehavioral abnormalities	Neurological
Parkinson's disease/Movement disorders	Neurological
Retinoblastoma	Neurological
Seizures	Neurological
Trigeminal neuropathy	Neurological
Cataracts	Ophthalmological
Color vision disturbance	Ophthalmological
Decreased vision (includes blindness, retinopathy, optic neuropathy)	Ophthalmological
Macular degeneration	Ophthalmological
Chronic Fatigue Syndrome	Psychiatric



Disease name	Disease class
Gulf War Syndrome	Psychiatric
Hypoactivity	Psychiatric
Multiple Chemical Sensitivity	Psychiatric
Neurosthenia (Organic affective syndrome)	Psychiatric
Psychiatric disturbances (disorientation, hallucinations, psychosis, delirium, paranoias, anxiety/depression, emotional lability, mood changes, euphoria)	Psychiatric
Acute tubular necrosis	Renal
Chronic renal disease	Renal
Glomerulonephritis	Renal
Kidney toxicity	Renal
Nephrotic syndrome	Renal
Renal stones	Renal
Abnormal sperm (morphology, motility, and sperm count)	Reproductive
Altered sex ratio	Reproductive
Altered time to sexual maturation (accelerated or delayed puberty)	Reproductive
Benign prostatic hypertrophy	Reproductive
Endometriosis	Reproductive
Erectile dysfunction	Reproductive
Genito-urinary malformations (includes male and female)	Reproductive
Ovarian atrophy	Reproductive
Ovarian toxicity	Reproductive
Pre-eclampsia (pregnancy-induced hypertension)	Reproductive
Pre-term delivery	Reproductive
Reduced fertility - female (infertility and subfertility)	Reproductive
Reduced Fertility - Male (infertility and subfertility)	Reproductive
Reproductive, female, not otherwise specified	Reproductive
Reproductive, male, not otherwise specified	Reproductive
Reproductive tract toxicity, female	Reproductive
Reproductive tract toxicity, male	Reproductive
Testicular toxicity	Reproductive
Uterine fibroids	Reproductive
Asbestosis	Respiratory
Asthma - allergen, sensitizer	Respiratory

Disease name	Disease class
Asthma - irritant	Respiratory
Berylliosis	Respiratory
Black Lung Disease	Respiratory
Bronchiolitis obliterans	Respiratory
Bronchitis - acute	Respiratory
Bronchitis - chronic	Respiratory
Brown lung disease (byssinosis)	Respiratory
COPD (chronic obstructive pulmonary disease)	Respiratory
Flock workers disease	Respiratory
Hard metal disease	Respiratory
Mesothelioma	Respiratory
Metal fume fever	Respiratory
Pleural disease (effusions, plaques, thickening)	Respiratory
Pneumoconiosis	Respiratory
Pneumonia	Respiratory
Pneumonitis (hypersensitivity)	Respiratory
Pulmonary disease-anemia syndrome	Respiratory
Pulmonary edema	Respiratory
Pulmonary fibrosis	Respiratory
Rhinitis - allergic	Respiratory
Rhinitis - irritant	Respiratory
Silicosis	Respiratory
Sudden Infant Death Syndrome (SIDS)	Respiratory