CONCEPT - KNOWLEDGE MAP ParisTech 2 Note: This map presents a simplified understanding of cancer & cancer treatment (on the left) and **KNOWLEDGE SPACE CONCEPT SPACE** several alternatives that emerged during our discussion with experts (alternatives on the right). If you see any incosistencies, you are aware of some interesting projects on cancer treatment or you have new ideas on how to go further, don't hesitate to contact is ak ckmap@epidemium.cc We will complete the map thanks to your inputs! **USING CANCER DATA** Ideas explored generated during workshops Cancer is a disease Dominant design for cancer related research Potentially interesting ideas to explore that are interconnected in a complex way Epidemium 2016 : Challenge4Cancer projects elated to environment (exposure to radiations UV, exposure to related to the profile (age, sexe) related to genetic predispositions infectious agents, radon, dioxin, asbestos, pesticides...) 1 Viz4Cancer can be solid: carcinomas (90%) (skin, mucosa, glands) or sarcomas can be liquid: leukemias (8%) (blood, bone marrow) or lymphomas 2 CancerViz is characterized by the organ/cell tissue where it first develops 3 Baseline and consists of normal cells that have mutated 4 Approches prédictives et risque de cancer and thus gain new properties ("super powers"): 5 Oncobase - Sustaining proliferative signaling - Resisting cell death 6 BD4Cancer Inducing angiogenesis - Reprogramming Energy metabolism - Evading Immune Destruction starting from several cells that mutate on different ways and complement to gather these 8 properties (polyclonal cancer) tarting from a single cell that mutates and gains some of these 8 By having at least 5 mutations on a cell Which have not been repaired by automatic control quality from that first develops into a benign cluster of cancer cells growing through cell division amplified by the captation of growth signals intended to close to "heal" cancer to block cancer propagation to prevent cancer to detect cancer at early stage to eradicate cancer Cancer is asymptomatic initially but is highly painful in advanced stages by curative therapies by preventive therapies for palliative care (e.g. bone cancer). Some cancers are incurables Cancer is detected Side effects of radiology and through screening tests performed by medical staff through self-screening techniques through screening techniques performed by third parties No radiation with MRI with a further and more frequent follow-up for people at risk (risk in continuous when first symptoms appear on a regular basis (organised screening) factors, genome analysis, age, sexe) (individual screening) That evolves according to the stage of illness through non-invasive techniques through invasive techniques chosen according: e symptoms (absent, well recognizable, visual, non visual, weak non-specific or not known) - the techniques sensibiliy and specificity - the type of cancer to detect (stage, localisation, features) - the practices of each country self-detection of melanoma through <u>IBM Watson Virtual doctor for</u> That may have side effects at detection & treatment (over that are completly safe for the patients that slow cancer propagation visual observations <u>detection</u> with a high ability to anticipate further evolution of the tumor at ith a low ability to anticipate further evolutions of benign tumo different stages Cancer is treated through invasive techniques through non-invasive techniques Complementary therapies - cumulative positive impact with classic

By studying cancer mechanisms through

alternative medecines (energies, chinese

medicine, homeopathy, phytotherapy)

By adapting the treatment

according to care path

approaches:

- Cancer and Therapeutic Pluralism:

http://anthropologiesante.revues.org/659
- Cancer and parallel medicin : http://scd-theses.u-

Patients assocation advocacy for external informations, collaborative

decision making

art. L1111-4 Right to refuse treatment (in France)

Reimboursement rates varies across different countries

<u>Cancer vaccines</u>

By targeting the tumor (surgery with tumor removal, ,

oosen according the SOR, "Standard, Options, Recommandatio

pendent on the practices of each country (e.g. reimbourseme

rates impact, norms)

and a treatment efficiency based on

- the patient (age, medical and surgical histories...)

d may be reduced if cancer cells have mutated into more resistant evolutions ("échappement")

radiotherapies). Or by targeting cells with cancer type cells

By strengthening naturally occuring defense systems :

- biotherapies including immunotherapies

hormonaltherapies

Adopted according to patient beliefs and the information

transmitted

With identical practices in several countries (e.g., EU)

preventively when high risk is detected (risk factors) preventively in all cases (like vaccination)

By acting on the psychological relationship between the patient and

his illness (Education, psychological well-being and stress reduction,

meditation)

Influenced by external structures

By adopting a lifestyle that undermine

health, geographical zones,...)

physical risks factors (nutrition, physical