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Project Title: “Cultural evolution and long term economic dynamics: The case study of Rome.”

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Research Group: Barcelona Supercomputing & Center Complex System Lab (UPF)

1 ABSTRACT: Cell Communication

<http://www.prbb.org/arxiu/event/1622>

- Seminar Title: Principles underlying cells talking to each other with diffusing signals
- Speaker: Hyun Youk
- Date: 11/01/2016
- Abstract:

Amount of autonomy Amount of collectiveness
Cell communication secrete and sensing cells Quorum sensing cells (social) Autocrine cells (cell communication) Secret and send circuit : a similar circuit Synthetic approach from bottom up
Expe pour montrer quelle se patlent a Elle meme
Celle qui se murmureny a leur propre oreils
From indivual to many. Cell
Entropu of population

2 ABSTRACT: Human Evolution

<http://www.prbb.org/arxiu/event/1685>

- Seminar Title: Reconstructing 40,000 years of Eurasian population history from ancient DNA
- Speaker: Martin Sikora
- Date: 22/01/2016

- Abstract:

Paleogenomic. Martin Sikora

Göns mirror geography in Europe November et al 2008, nature Cultural shift and genetic shift Otzi the iceman genome far away from the rest of central Europe. Corsega.

Gunther gatherer more close. To northern Europe Mesolithic from south Cultural context Neolithic farmer share with sardunya

Hunter gather Paleolithic north Europe. (2014)

Omrak et al 2016 current biology The new era.

2/HG history Paleolithic upper Paleolithic more close to Neanderthal but just one individual.

Sungir! Close to Kostenki. But not ancestor of HG. Measure of the the ancestor using drift unit. There where early European, but not the direct ancestor of European. There happen admixture with Neanderthal.

3/ the genetic origin of European. Genetic pattern and language. Late creation

3 ABSTRACT: Gene to Cognition

(<http://www.prbb.org/arxiu/event/1656>)

- Seminar Title: From gene to cognition in a mouse model of schizophrenia predisposition
- Speaker: Joshua A. Gordon
- Date: 22/02/2016
- Abstract:

Joshua Gordon

Gene-cell-circuit-system-behavior

Schizophrenia example. 22q11 microdeletion. Genetic prob associated with different phenotypes disease

Mouse model with artificial micro deletion. Tested with T-maze, (delayed non match to sample test).

Spatial task to test working memory

Muted mouse doesn't succeed in the task.

So the two extreme of the scale. The gene (microdeletion) to behavior (t.maze task).

Hypocampus with prefrontal cortex. Both are altered, interaction between both are altered. Sync or asynco local field potential (LFP) as EEG but deep in brain. In the hippocampus. Single spike in the prefrontal. Statistically phase between prefrontal spikes and hippocampus phase.

In muted mice?: Phase locking? Computer move.. I don't get it. b Hippocampus send info to PFC.

The deduce in synchronization can predict the time of learning in muted mice.

How arise the synchronization and why desynchronization appears?

No projection between dorsal hippocampus and PFC so need pass through the ventral. Truc pompe qui inhibite avec des fibre optique. Allow to remove the direct connexion between ventral hippo to PFC. (Spellman et. Al nature 2015) But pb with the setup. So more complex task Record of neurones to see if PFC encode the goal Using max margin linear classifier. To try to see if the firing rate record can help to classifier where is the mice.

The link between pfx and hippocampus is used only to record the goal. So partial explanation at the circuit level.

Gene palmitoylation (Mukai et. Al, Neuron 2015) Zdhcc8 Problem of axon development and growing. Branching pattern AR less complex in muted animal. They link the mutation to protein to phenotypes. Inject Gsk3beta antagonist to recreate the good axone. Tamura et al neurone 2016. Reuse of the classifier.

4 ABSTRACT: Sampling and Social relationship

<http://cbc.upf.edu/node/36187>

- Seminar Title: Selective Information Sampling and Judgments in Social Environments.

- Speaker: Gal Le Mens
- Date: 19/02/2016
- Abstract:

Behavioral Sciences, Experimental vs Field Formation of social influence

A Conformity Behavior B or inference

C? no popularity no motivation cognitive (note sur le carnet normal) As pointed out by Herbert Simon more than 50 years ago, understanding human judgment requires examining both how the mind processes information and the structure of the information provided by their environment. Much psychological research focuses on the information processing component of Simons proposition. In this talk, I will review research that advances an alternative perspective which emphasizes the structure of the environment.

The key mechanism is that the social environment exposes people to activities and objects they might otherwise have avoided: people get exposed to the activities their friends engage in, that their bosses instruct them to do, etc. By shaping the information samples to which people have access, the social structure has systematic effects on belief formation. As I will demonstrate, this approach offers alternative explanations, with distinct empirical predictions, for a wide range of belief and attitude patterns, including in-group bias, cynicism, preference for popular and novel items, and belief homogeneity within social groups.

5 ABSTRACT: Deepmind

- Seminar Title: Deep neural networks and reinforcement learning for building intelligent machines
- Speaker: Silvia Chiappa
- Date: 26/02/2016
- Abstract: La merde de deep Blue

(note also sur le carnet)

6 ABSTRACT: Intellectual Disability

- Seminar Title: Rembrandt: Remodelling brain development in intellectual disability
- Speaker: Mara Dierssen
- Date: 20/04/2016
- Abstract: Down syndrome (DS) is the most common genetic form of intellectual disability, with an estimated incidence of more than 200,000 cases per year worldwide. In DS brain, suboptimal network architecture and altered synaptic communication arising from neurodevelopmental impairment are key determinants of cognitive defects. Regardless of their molecular cause, most DSs are characterized by neural plasticity disruption, and therefore this is a natural target for therapeutic purposes. Our group has demonstrated that epigallocatechin-3-gallate (EGCG), the most abundant catechin of green tea, promotes learning and memory recovery, produces extensive dendritic remodeling in DS mouse models and significantly improves memory, executive functions and adaptive behavior along with increased functional connectivity in specific brain regions of DS adults (Phase I and Phase II clinical trials). This has been a crucial step in treating intellectual disability that has opened new important questions.

Neuroscience pharmacology. Neuropharmacology. An abandoned place. Because company are still in the neural doctrine. Nerone are the unit of computation of the brain.

Ramon y cajal and Sherrington .

Mental function arise from overlapping neural network in temporal synchrony. Many to many connexion connectivity matrices.

Lorente n already say that the design is recurrent and this recurrence allow functional reverberation.
 Circuit fine tuned by plasticity
 Trisomy 21 down syndrome cognitive phenotype.
 Pathological morphology: input and output problems-¿ define of the connectivity matrices . Less dendric
 spines the tree is less dense.
 Find the protein that pose problem. Dyrk1A
 Concentration of this protine is important too much or to less is bad German patterson desin mathe-
 matical model to see the dosage effect. Once slotted the protein what happen at the physiological level?
 Difirence on oscillations? Up and down oscillaty state.from physiology oscillatory state to the behavior.
 Hypotheses about GABA the inhibitory path.
 Less inhibitory content so wrong hypotheses? So should come from something else. At the network
 level.using a mathematical model about conductivity The model show that by less inhibitory is sufficient to
 reduce gamma stouf. Tough work. Now we know how to recreate back the phenotypes.
 Plasticity can change the connection.plasticity to avoid decline. Environment to restore the phenotypes.
 Find a molecule to regulating the missing function. Egcg. Test on mouse.
 Test in human molecule + cognitive simulation Lab test + quality of life + neuroimagery.
 MRI and tms to validate the fact that connectivity is restored.
 Molecular rewroment
 Proteomics.b
 No targetic specific molecule but global change cbinaong different approay pharmacology/cognitive etc. . . .

7 ABSTRACT RIN4

Session of the 20st of April :

- Lego & gene
- All is not genetic
- Psychology animals cognition
- Colombian slang Spanish traduction in different language
- Bike in barcelone
- l'anthorpologue art and internet
- Technical implementation of 4G
- Map representation and Psycology
- Simon Carrignon

8 ABSTRACT: Prosody and Learning

9 ABSTRACT: Detect selection

Fct Selection in rare positive mutation IHS and nSL detect polygenic haplotype and. Homozygosity. H12
 Artificial selection. 10 chromosomes of 1M bases

Determine if detection method are good Power and false positive pas competition Using Windows of
 200position. Fixe the windows and make test. Elle me me convint pas du tout du tout.

Benchmark with data from heliconius which mimic other species. Numata vs Melpomene Balanced
 selection associative mating IHS nSL work with Windows H12 also but too costly.