

UNAM-IPN México iGEM 2007

<http://parts.mit.edu/igem07/index.php/Mexico>

Eidgenössische Technische Hochschule Zürich

MIT Boston, May 26, 2007

ETH Zürich, June 27, 2007

Part I

Preamble

Institutions and instructors

Institutions

1. National Autonomous University of Mexico (UNAM)
 - 1.1 Institute of Applied Mathematics and Systems
 - 1.2 Faculty of Sciences
2. National Polytechnic Institute (IPN)
 - 2.1 High School Computing
 - 2.2 Professional Interdisciplinary Unit of Biotechnology

Instructors

Arturo Becerra Bracho (FC), Edgar Salgado Majarrez (UPIBI), Elías Samra Hassan (FC), Fabiola Ramírez Corona (FC), Francisco Hernández Quiroz (FC), Genaro Juárez Martínez (UWE), Juan S. Aranda Barradas (UPIBI), Pablo Padilla Longoria (IIMAS) and Rosaura Palma Orozco (ESCOM).

Objectives to short and long term

short term

1. Learn of the previous experiences and results from iGEM
2. Valid our own experiments with their biobricks (we have special interested in Cambridge's results)
3. Fuse the concepts of genetic networks (GN), cellular automata (CA) with biobricks
4. Design a simple pattern like diffusion with well-known iGEM biobricks from GN and CA bricks

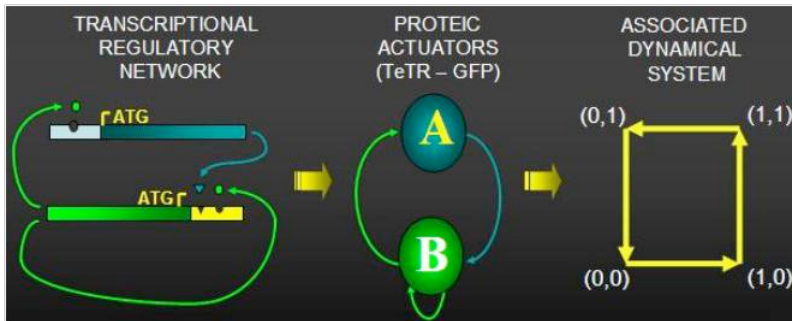
long term

1. Design new biobricks
2. Look a way to formalize this biobricks with GN and CA
3. Construct a free software to assembly biobricks based in logic relations and formal languages
4. Design a local database knowledge-based

Part II

Our perspectives in iGEM 2007

Synthetic construction based in genetic network architectures



Synthetic construction of patterns with CA bricks

Synthetic constructions

Architecture inspire in genetic networks

CA bricks a way to formalize biobricks

Final notes

References

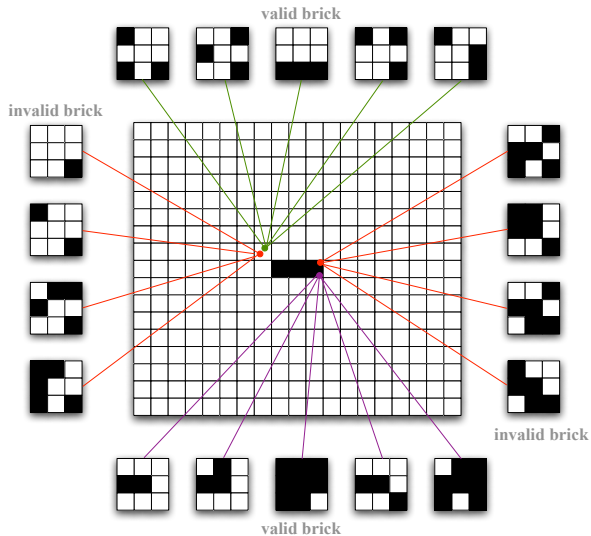
cells {  cell dead
 cell live

actions {  survival
 born
 dead

initial condition



two primary restrictions







Our team have values sources from their laboratories, students and instructors. Nevertheless, actually we have some problems to acquire actives and strain to handle our self experiments. Partially, some support was reached but is not sufficient to work suitably.

full team

1. 13 students
2. 9 instructors
3. 6 advisors

References

-  New tools for self-organized pattern formation
[http://parts.mit.edu/wiki/index.php/
Cambridge_University_2006](http://parts.mit.edu/wiki/index.php/Cambridge_University_2006)
-  iGEM Mexico
Biological implementation of algorithms and cellular automata
simulations
IET Synth. Biol., technical report, June 2007.
-  Mariana Benítez, Carlos Espinosa Soto, Pablo Padilla
Longoria, José Díaz an Elena R. Alvarez Buylla
Equivalent genetic networks in different contexts recover
contrasting spatial cell patterns
Int. J. of Developmental Biology 51, 139–155, 2007.
-  Andrew Adamatzky, Genaro Juárez Martínez and Juan C.
Seck Tuoh Mora
Phenomenology of reaction-diffusion binary-state CA
Int. J. of Bifurcation and Chaos, 16/10:1–21, 2006.

Questions, commentaries or critics all they are welcome.

Thanks!