# iGem-Team Heidelberg 09

Setting new Standards in mammalian cells

# The idea

We want to **quantify** the activity of multiple **signaling pathways** in individual mammalian cells

Why?

Normal single cell assays quantify one signaling pathway at a time > no information about relation of different pathways

we develop a quantitative reporter system that can monitor multiple signals at once

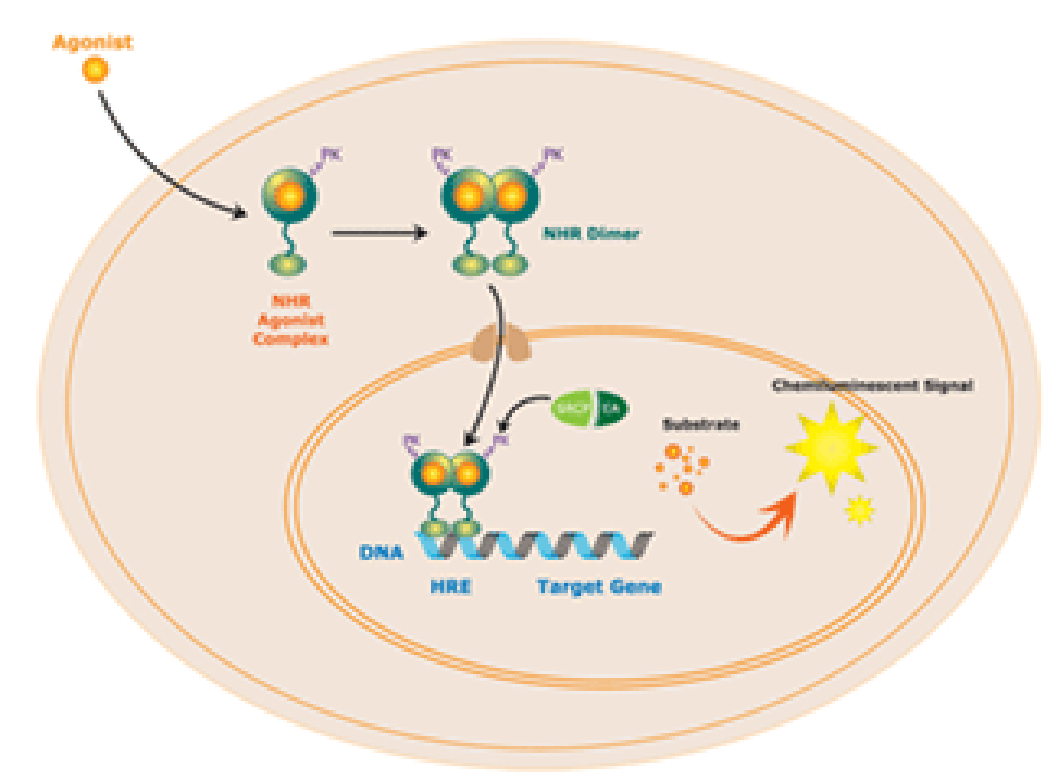
Natural promotor genes are unspecific

We generate a synthetic system that is specific for its signaling pathway

iGem wants to move forward into eucaryotic cells

we develop a new standard for BioBricks in a mammalian cell system

# Reporter gene assays

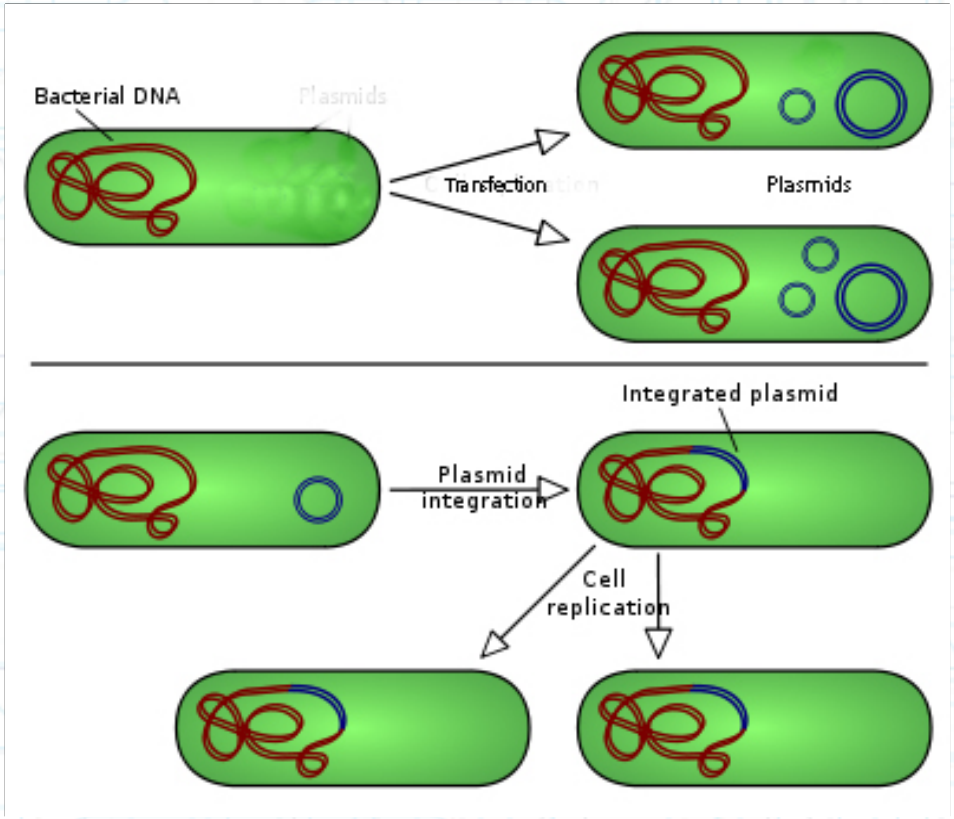


# Reporter gene assay is not quantitative

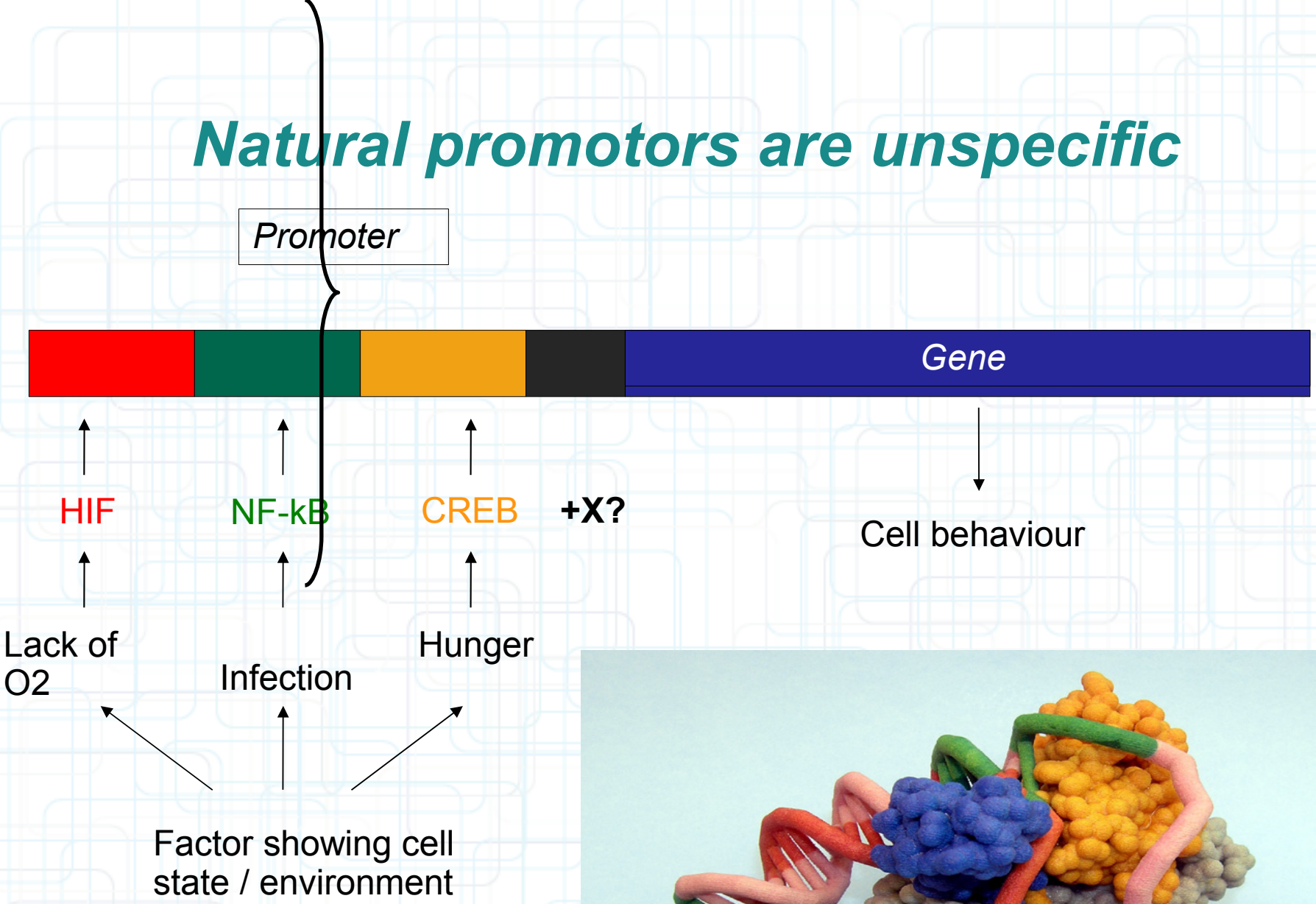
getting the reporter into the cell => one or more plasmids can be transferred into the cell
=> signal scales with amount of plasmids

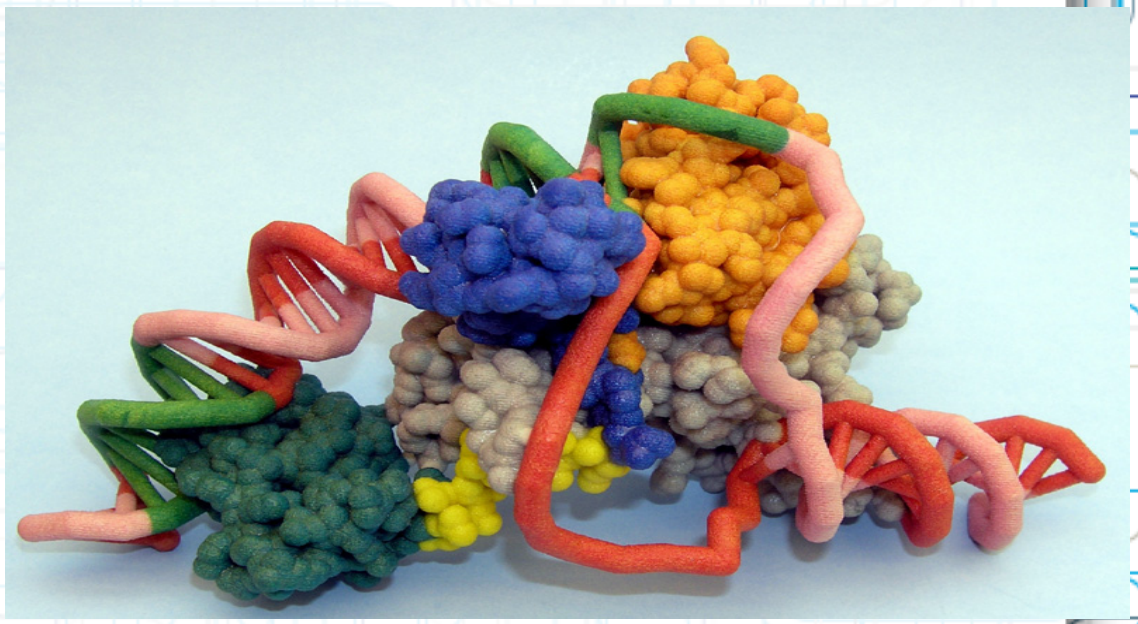
stable integration into the genome
=> costs time
=> has to be standardized everytime

standard, controllable way of integration
> Flip-system



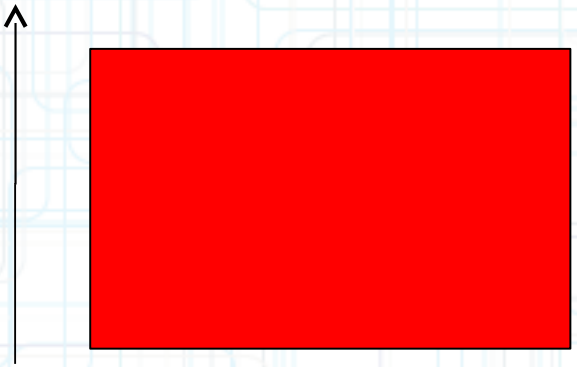
# Natural promotors are unspecific



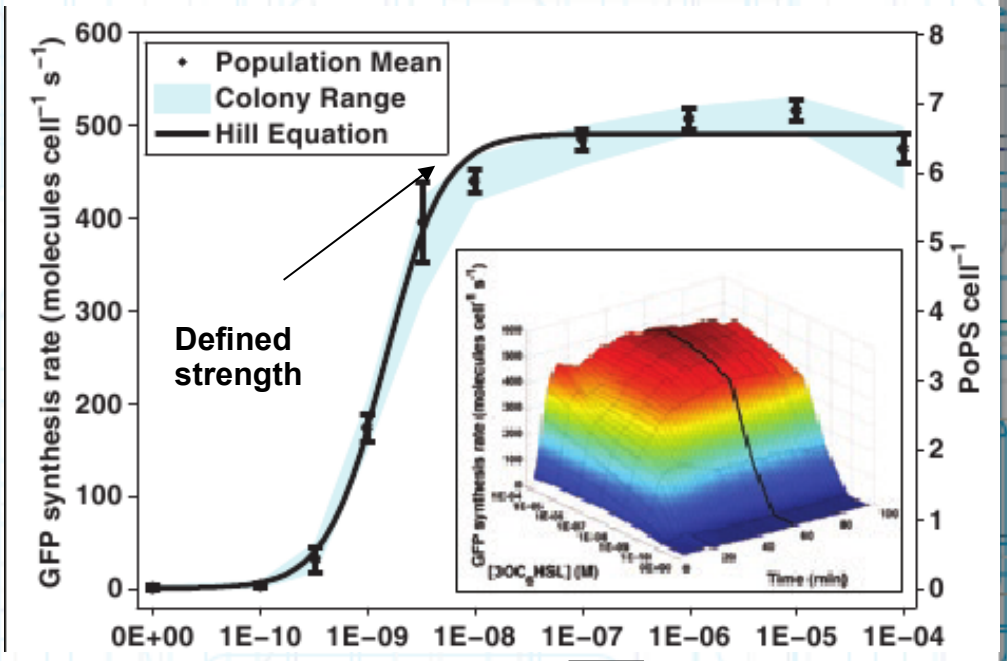
# Synthetic promotors provide a quantitative, reliable output

*Synthetic Promotor* | *Fluorescent Protein with targeting sequence*



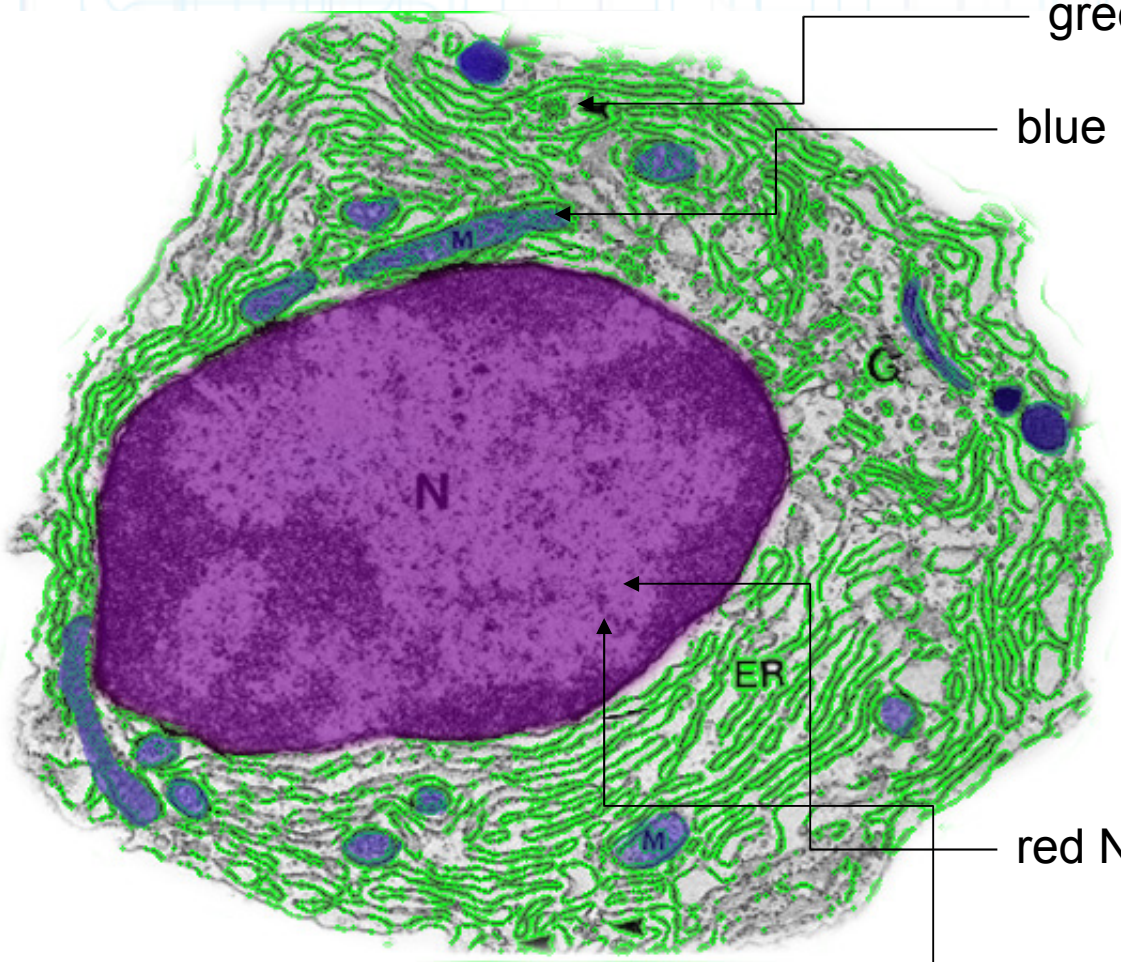
Single factor Other factors

*Colour- and compartmet specific output*



# Strategic design of synthetic promotors

# Multiple outputs from one cell



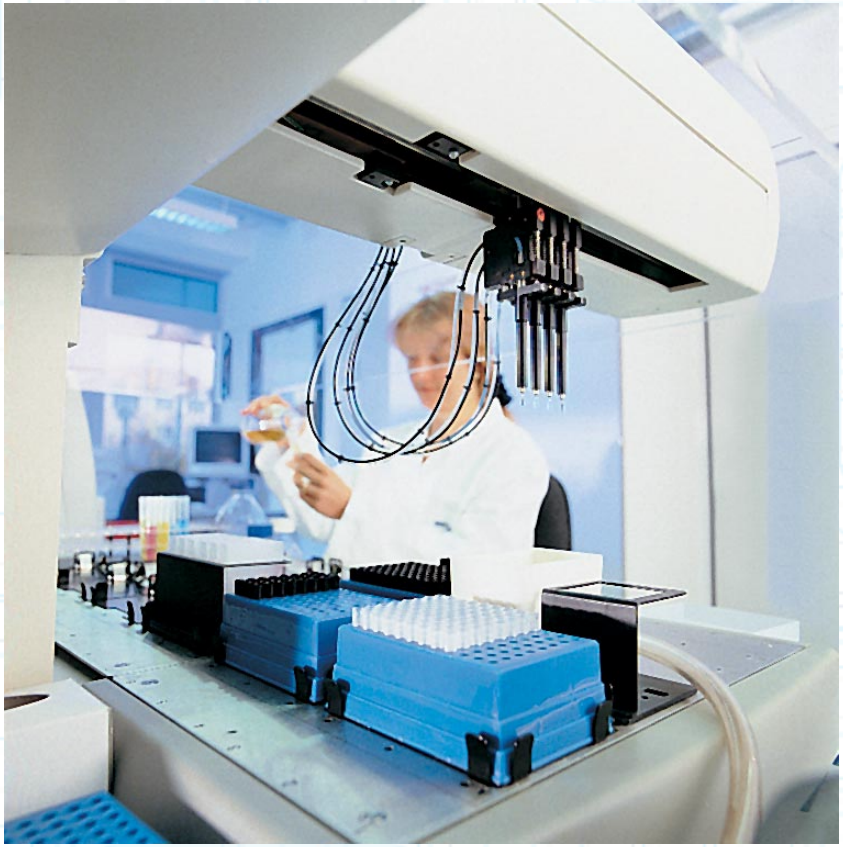

green ER = lack of nutrients

blue Mito = onset of cell death

red Nucleus = lack of Oxygen

blue Nucleus = cell is infected

# Applications

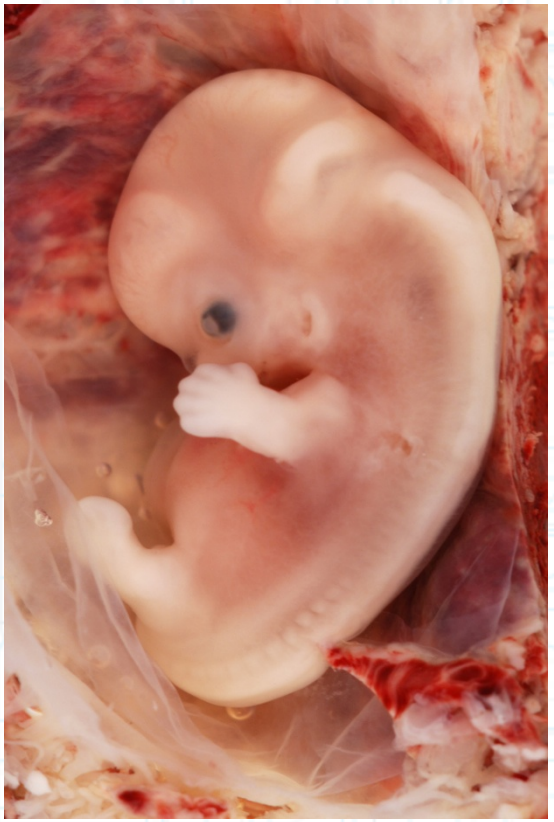


⇒ Test drugs for molecular effect

⇒ Identify new drugs

# Applications

Molecular mechanisms of cancer development



Molecular mechanisms of embryonic development

# Applications

***Gene Therapy!***

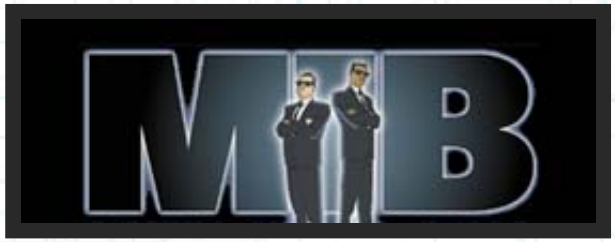
§ activate therapy only when necessary

§ integration of pathway signals

# The title

**SpyBricks**
Standard mammalian Parts which can be used to monitor pathway activities
**OR**
analysing and exploiting intracellular behaviour / signalling pathways

**MammaliaBricks**
Spying on intracellular signalling pathways

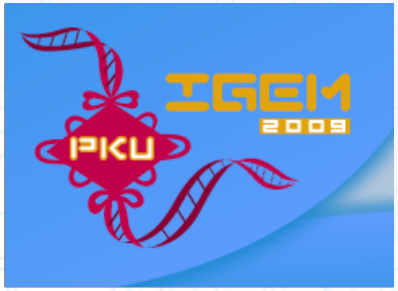



**Mammalia InitialBricks**
Spying on the weirdest cell in the universe
**OR**
**Mammalian Investigator Bricks**

**Or a more serious title ??**

**FutureBricks**
Setting new Standards in mammalian cells



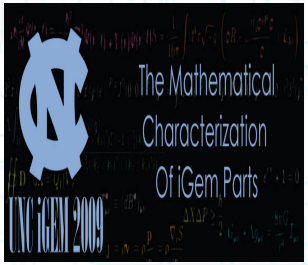











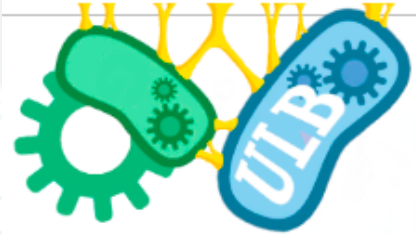

Formatvorlage des Untertitelmasters durch Klicken bearbeiten

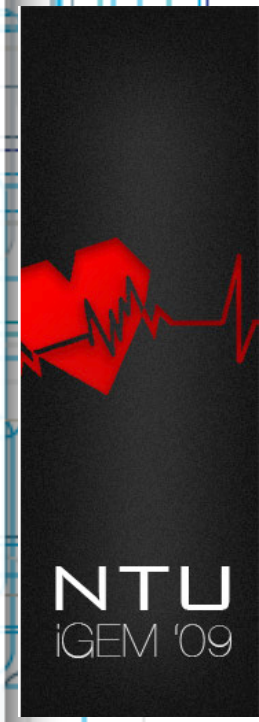


iGEM 2009 Strasbourg





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