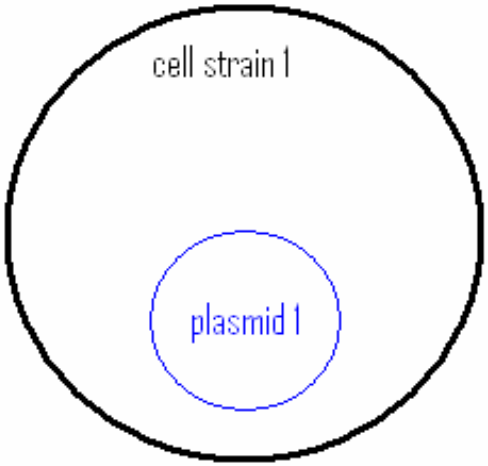
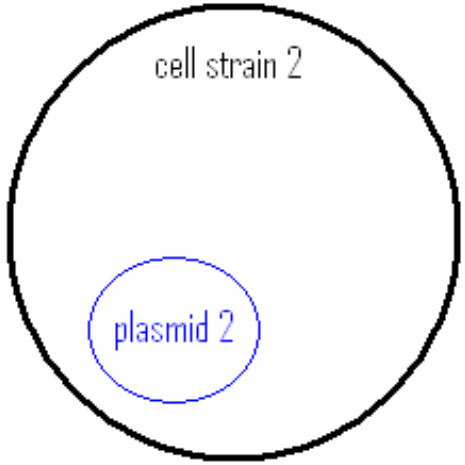
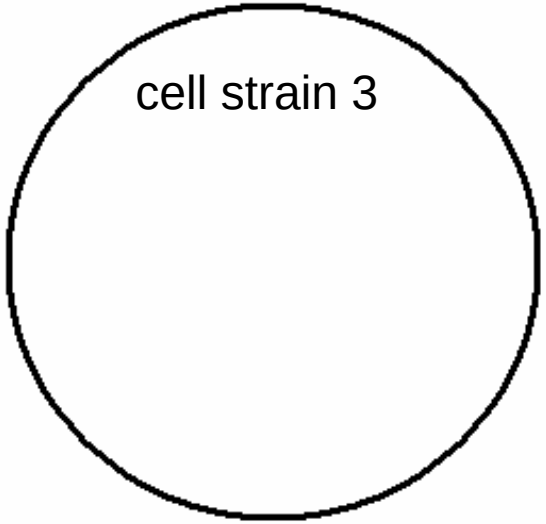
Cellular Logic Gates

Creating logical circuits of cells using information contained in plasmids transferred between cells via conjugation.

basic logical AND gate diagram & description







<the next few slides should be a single slide with animation, and be made cleaner>

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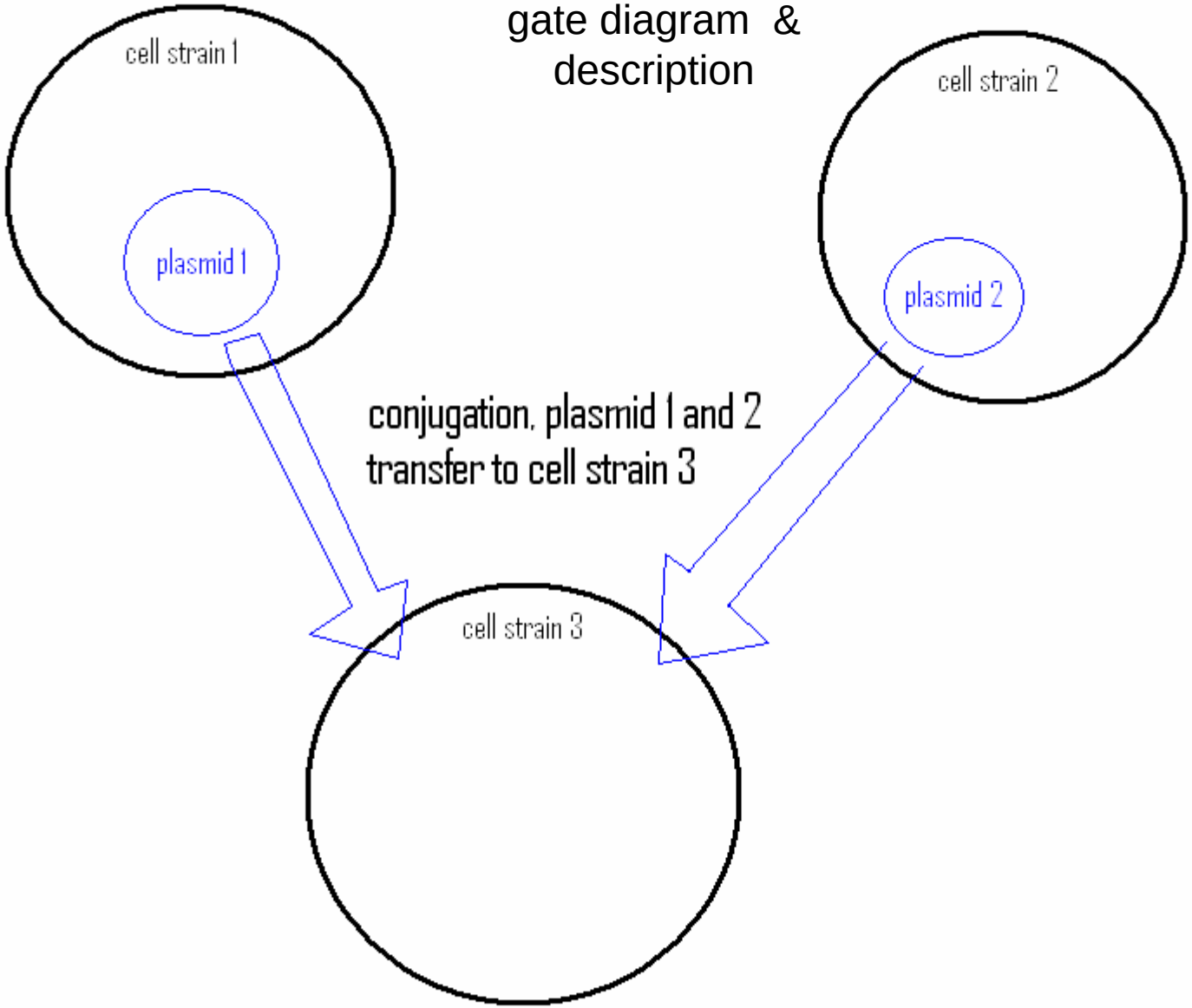

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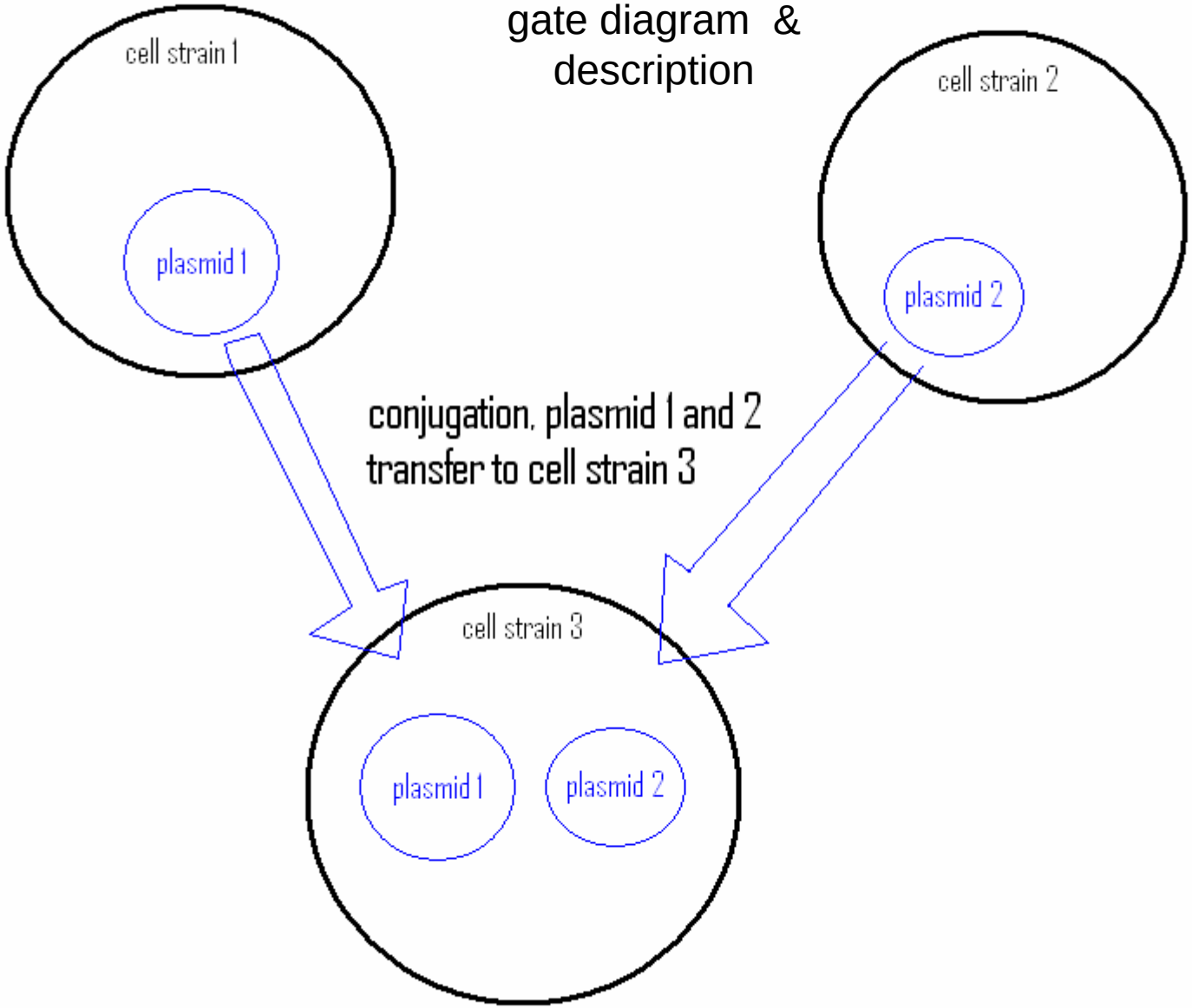

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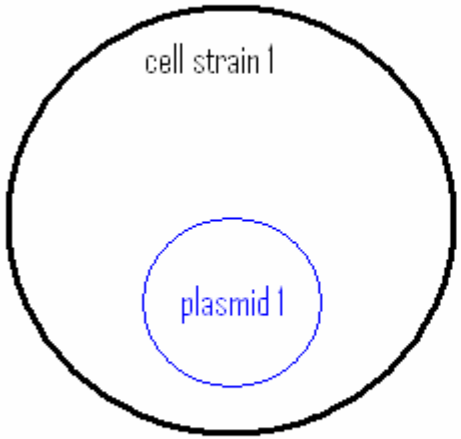
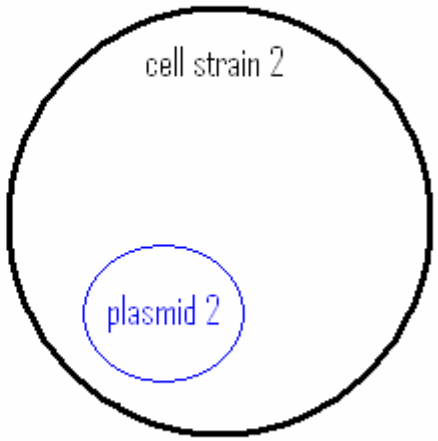
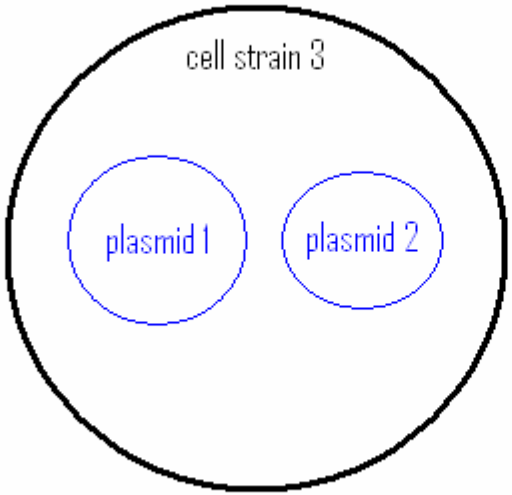


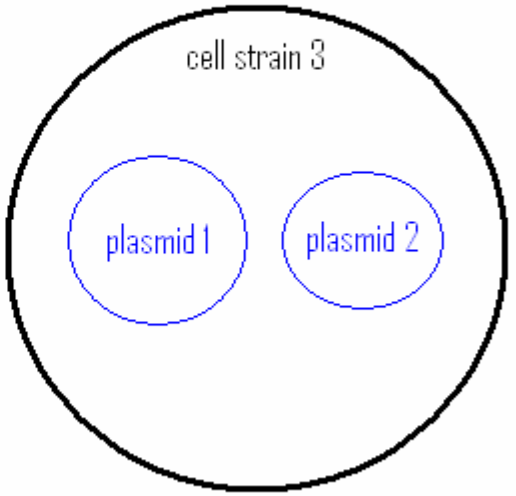


conjugation, plasmid 1 and 2 transfer to cell strain 3



the truth table exists in cell strain 3. The inputs are plasmid 1 and plasmid 2 (or the expression of these plasmids)

plasmid 1	plasmid 2	expression in cell strain 3
1	1	1
1	0	0
0	1	0
0	0	0



plasmid 1 and plasmid 2 lead to a distinct expression when in the same cell strain

a closer look at the plasmids

this is pictures/diagrams of plasmid 1 and plasmid 2 (probably with locks and keys, not Lux system. definently with OriT)

transition from AND to NAND

now, a diagram including the Lac inverting system. (it’s not THAT simple, because a third plasmid now has to be introduced…)

some data of some stuff

not yet =(

Designing for the Application of Multiple Logic Gates

modify the single gates to output machinery to cause the recipient cell to pass another specific plasmid, with lock or key.

<the slide is a diagram of the lock+expression plasmid with new expression that leads to conjugation>