

**DOCUMENT 5 : BIOBUILDER : What a colorful world**  
**Risks analysis**

The risks associated with GMOs depend on :

- the organism which gives the new DNA sequence : *Chromobacterium violaceum*
- the organism which receives the new DNA sequence : *E.coli* K12 or JM109
- the new DNA sequence transferred

**For the experiment "What a colorful world" :**

We will transform *E.coli* strains (K12 or JM109) with the plasmid pPRL or pGRN.

The researcher has to fill in the following chart before starting the experiment.

| Criteria   | Name | Description : is it dangerous ? | Protection |
|--|------|---------------------------------|------------|
| organism which gives the new DNA sequence        |      |                                 |            |
| the organism which receives the new DNA sequence |      |                                 |            |
| the new DNA sequence transferred                 |      |                                 |            |

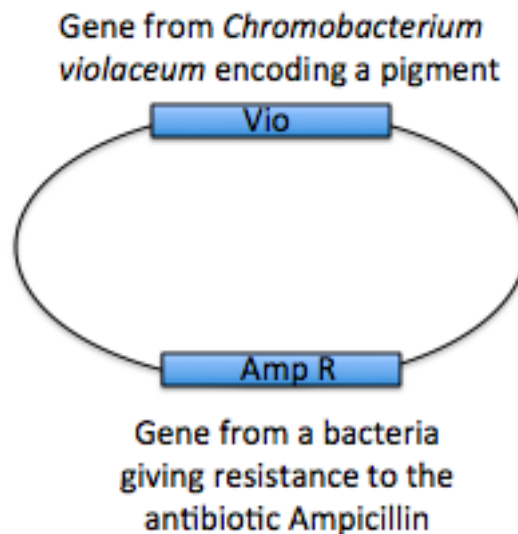
**Use the documents below to fill in the chart.**

**Classification of microorganisms**

| Class | Dangerous for health or environment | Spread in the population | Medecine against the disease |
|-------|-------------------------------------|--------------------------|------------------------------|
| 1     | No                                  | No                       | -                            |
| 2     | Yes                                 | Not easily               | Yes                          |
| 3     | Yes                                 | Possible                 | Yes                          |
| 4     | Yes                                 | Easily                   | No                           |

The strains K12 and JM109 of *E.coli* are classified 1.  
*Chromobacterium violaceum* is classified 2.

**Diagram of the plasmids pGRN and pPRL**



**Chromobacterium violaceum**

*Chromobacterium violaceum* is a Gram-negative, facultative anaerobic. It is part of the normal flora of water and soil of tropical and sub-tropical regions of the world. It produces a natural pigment called violacein, which may be useful for the treatment of colon and other cancers. It grows on agar, producing purple colonies (due to violacein production).

**Experimenting on GMOs**

In France, any lab wishing to study GMOs must ask the permission to the “Haut Conseil des Biotechnologies”. If there is no specific risk (class 1 microorganisms and non dangerous DNA), the council will agree. The usual rules will have to be followed.