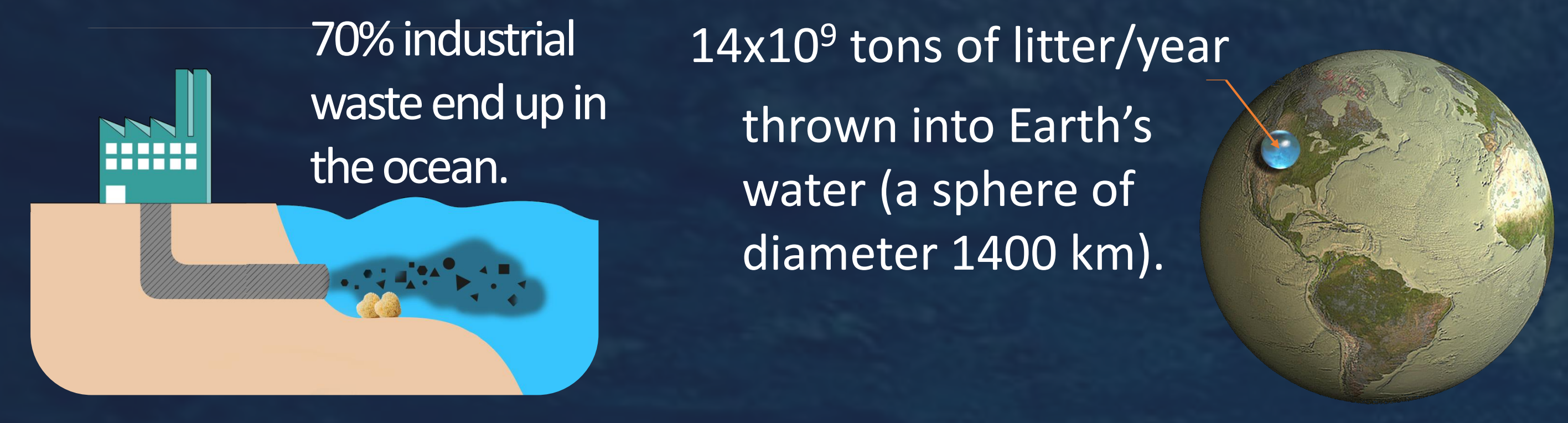


SPONGE PATROL: THE OCEAN'S WATCHER

OVERVIEW: OUR ENVIRONMENT? A DISASTER!



DANGER for 2 M species, ~25% of all species, INCLUDING US!

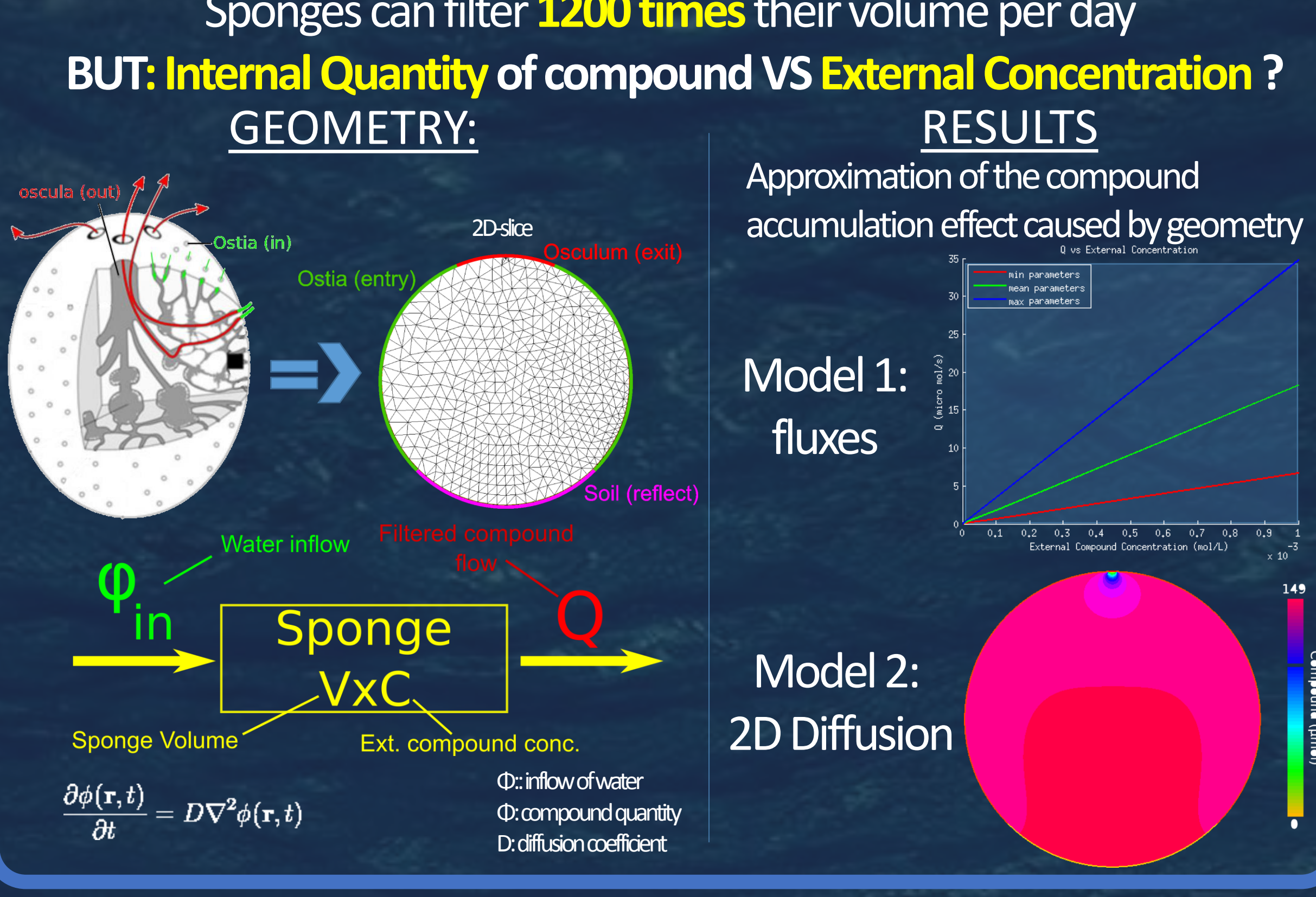
AIM: Detecting chemical industrial wastes in endangered biotopes.

FOCUS: 5 of the most chemicals in water: **PCB, Phenol, Cadmium, Lead and Nitrite.**

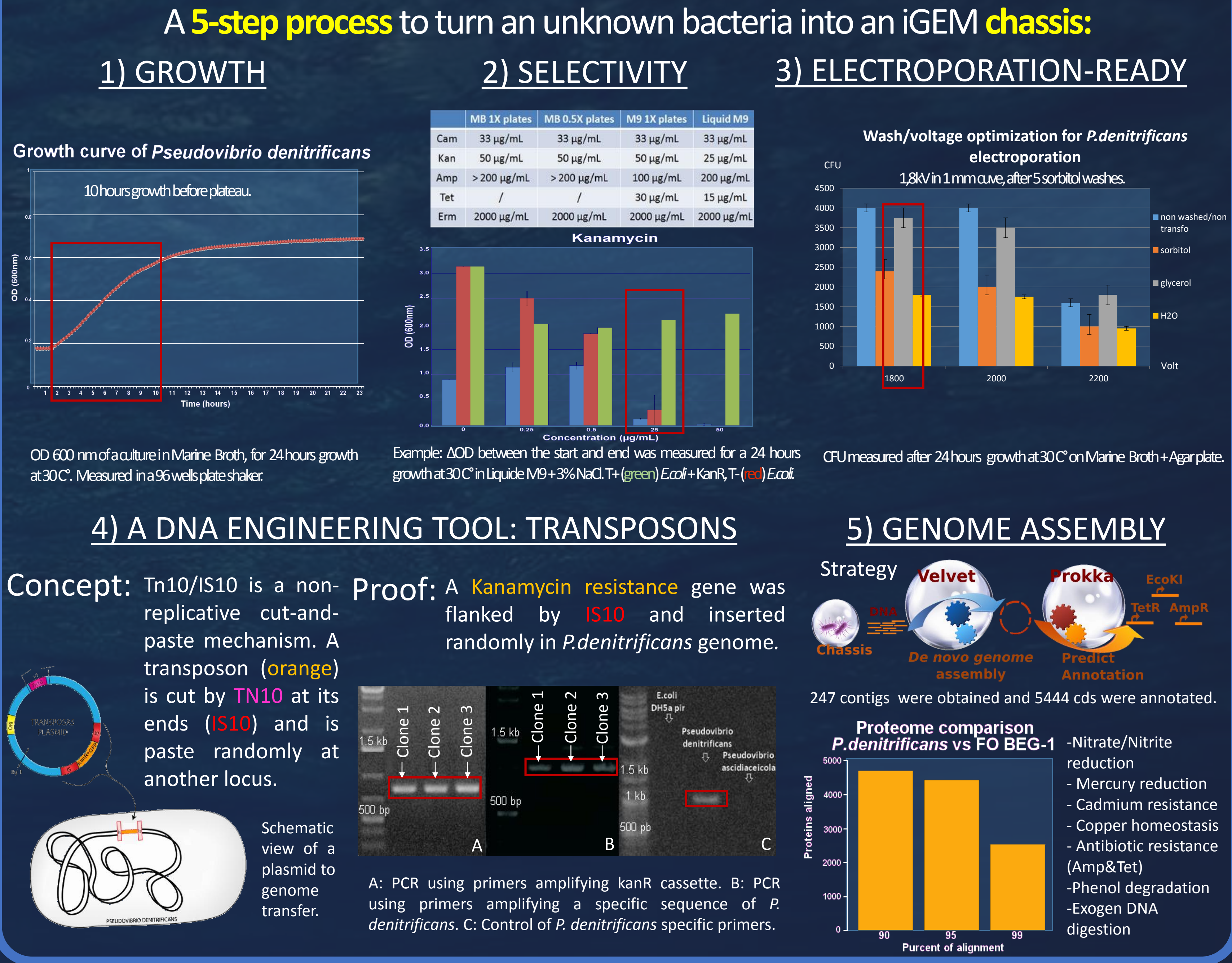
SOLUTION: A **real-time in situ biosensor** based on the combination of a Biofilter, a **sponge**, and a biosensor, a genetically modified **sponge microbiote**

- ACHIEVEMENTS:**
- Characterization of a new chassis (phenotype + genotype)
 - Transformation of a new chassis
 - Development of a new transposase system
 - Improvement of phenol sensor
 - Model of phenol sensors activities
 - Model of the sponge ability to optimize sensing

THE VIRTUAL SPONGE



A NEW CHASSIS : Pseudovibrio denitrificans

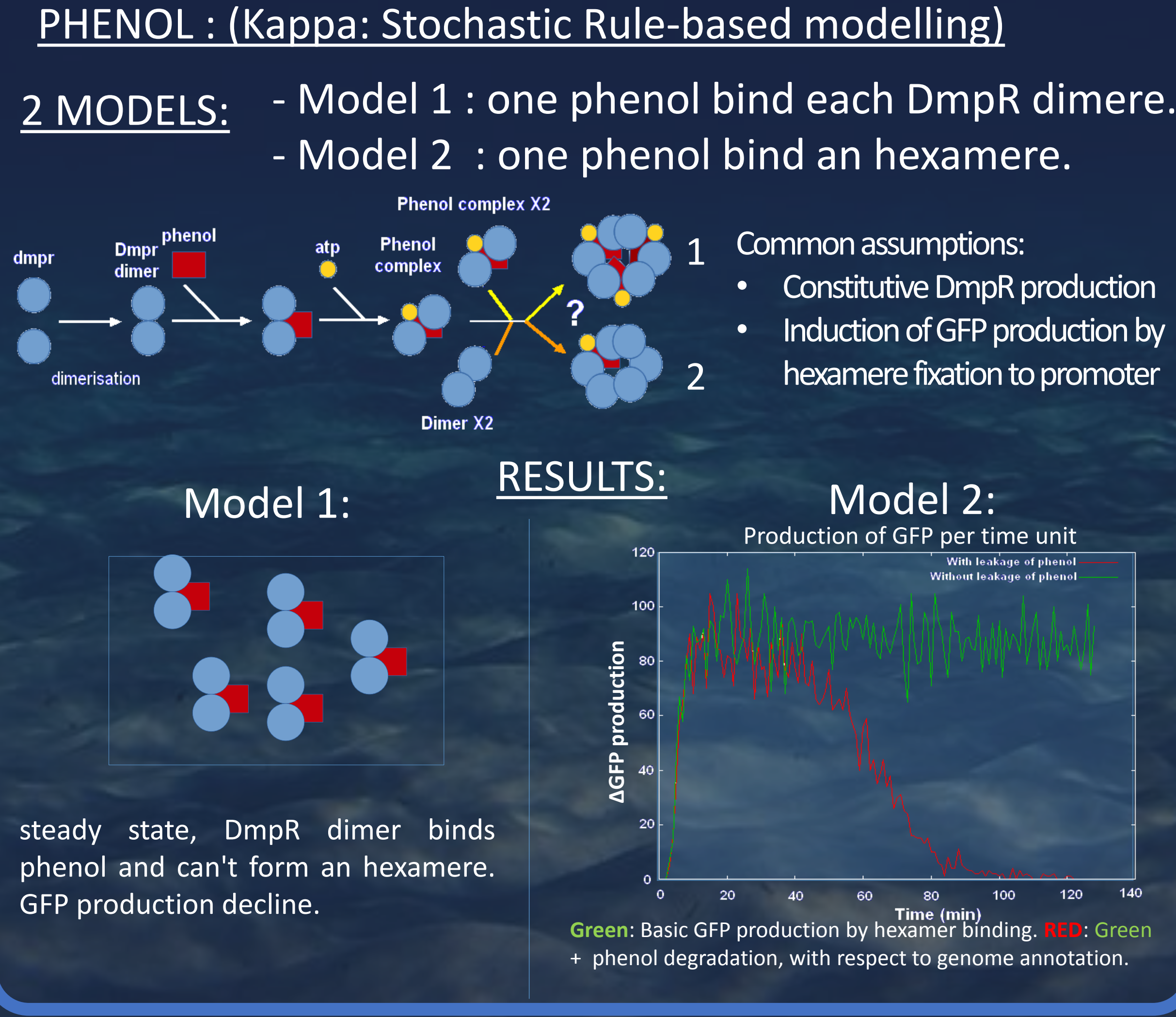


POLICY & PRACTICES

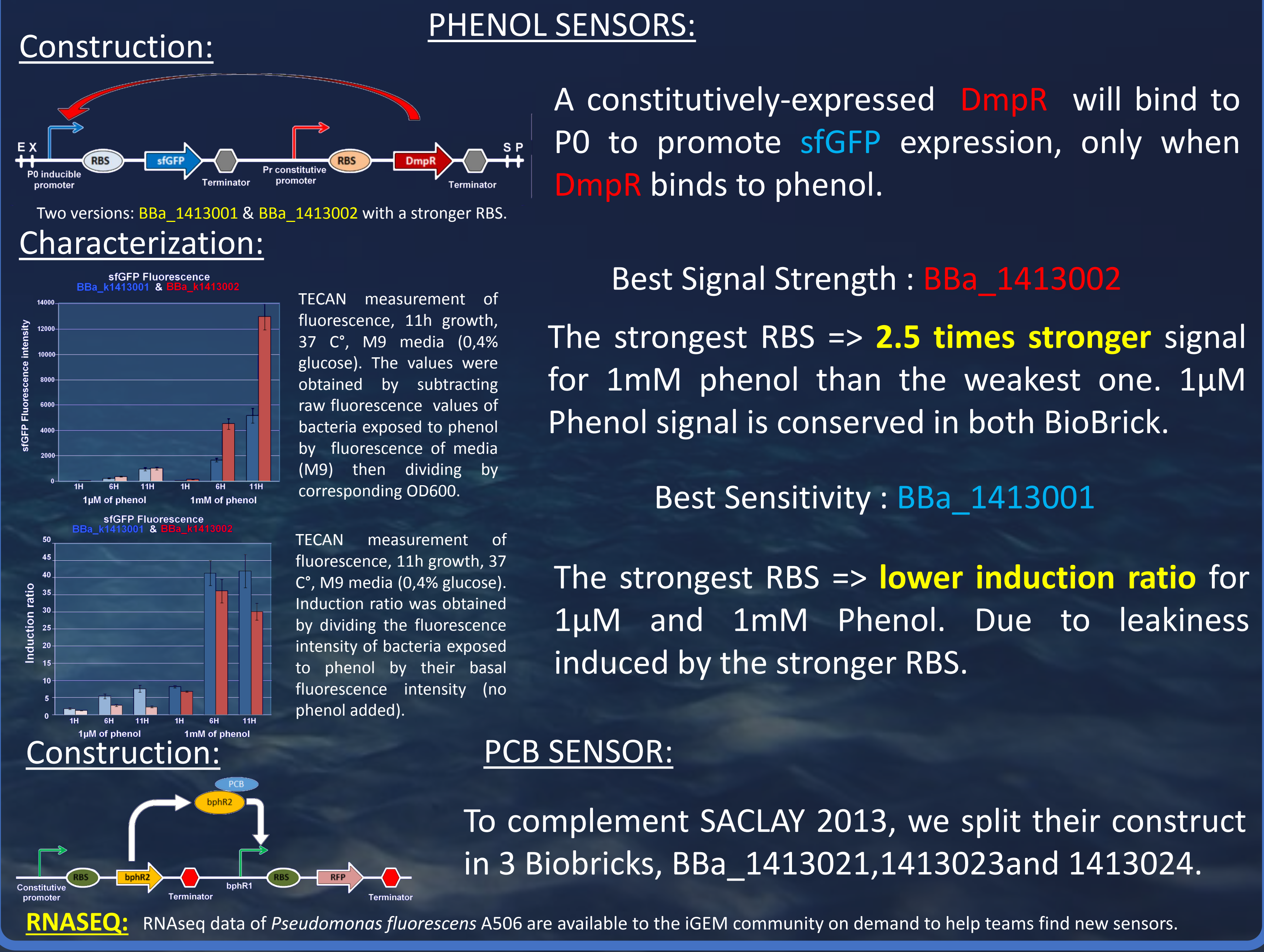
- Reflection:** **Synbio** wants to be the engineering of biology, but is **inelegant** and **unpredictable**. **Kludges** are **inherent** to the creative process, no matter how close to engineering it gets..
- Evaluation:** **Low** risk of **genetic pollution** if release of *P. denitrificans* in the sea: **lower fitness** than wild type => **Time-scalable colonization**. Still creation of a physical containment: **Sponge Box**.
- Discussion:** The ethical issues raised by the **modification** of an **animal's microbiome** and its use as **bioremediation** tool.



MODELLING PREDICTIONS FOR SENSORS



TWO GENETIC CIRCUITS IN THE MICROBIOTE



EXTRA: Interlab study

