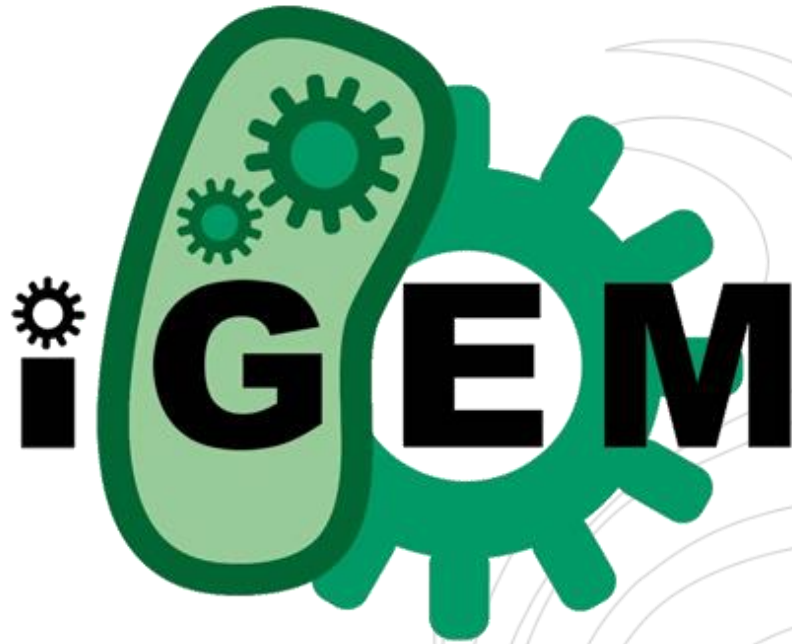


[http://igem.org/Main\\_Page](http://igem.org/Main_Page)



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指导老师：张红雨  
专业：基因组学

# 什么是iGEM?

- **iGEM**是**International Genetically Engineered Machine competition**（国际基因工程机器大赛）的缩写，是国际上合成生物学领域的顶级大学生科技赛事。**iGEM**比赛要求学生自主选题，利用课余时间合作完成相应的实验工作，充分锻炼了学生的独立工作能力和团队协作能力，同时也培养了学生对于科学的热情。

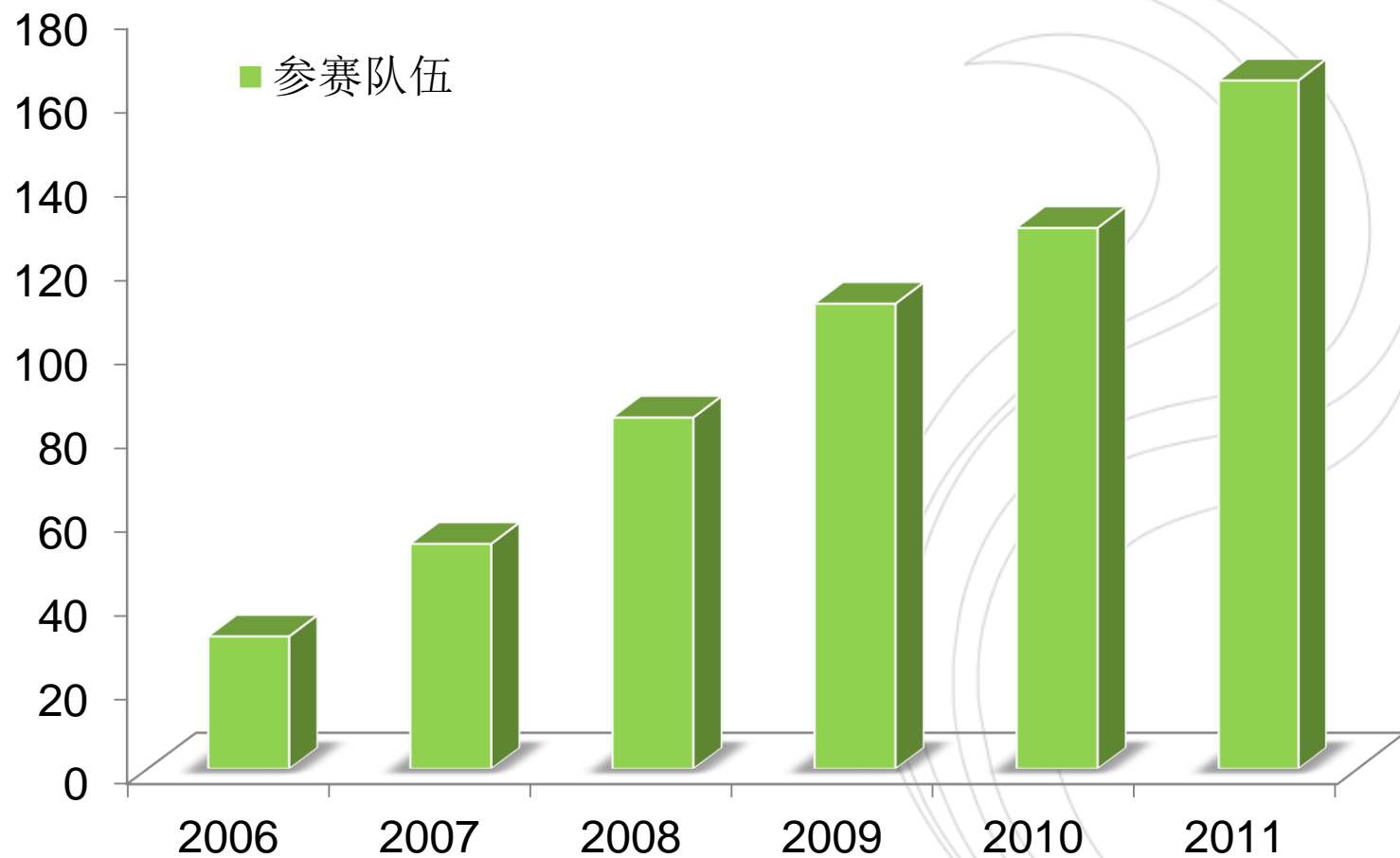
# iGEM 的目的？

- **iGEM** 试图重设计现有的天然的生物系统，或是设计和构建人工生物组件和系统，其目的在于通过了解天然生物体系的运作机理来创造全新的生物体系。**iGEM** 期望通过竞赛的形式，回答合成生物学中的核心问题——能否在活细胞中使用可互换的标准化组件构建简单的生物系统，并且加以操纵。每支队伍尝试使用标准化后的生物模块元件库，利用标准化的基因工程方法，以特定目的拼装人工生物系统，并进行操纵和测量。

# iGEM 发展历程

- 为推动合成生物学的迅速发展，**2003年**美国麻省理工学院发起了一项以本科生为参赛对象的国际遗传机器大赛。
- 两年后，也就是**2005年**，这个最开始仅仅 MIT 校内规模的比赛迅速升级为世界范围的国际比赛。越来越多世人谙熟的著名大学——哈佛大学，剑桥大学，加州伯克利大学和普林斯顿大学等无不对此表现出极大的热情。

# 历年参赛队伍数

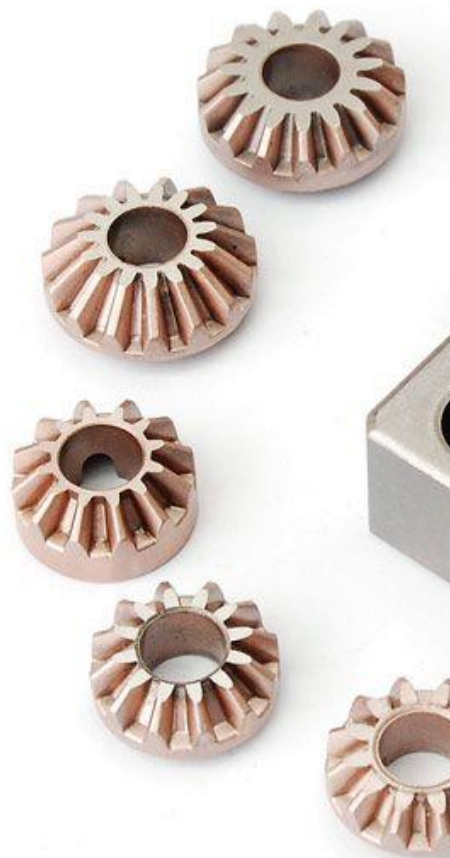


# iGEM 在中国

- 2007年天津大学、北大、清华、中科大作为中国首批参赛的四所高校都取得了令人瞩目的成绩。
- 紧接着的几年，交大、浙大、药大也都参与了竞赛。每年的竞赛受到 **Nature**, **Science**, **Scientific American**, **Economists** 等杂志，以及 **BBC** 这样的传统媒体的关注并进行专题报道。参赛项目覆盖环境、能源、健康等方方面面的内容。

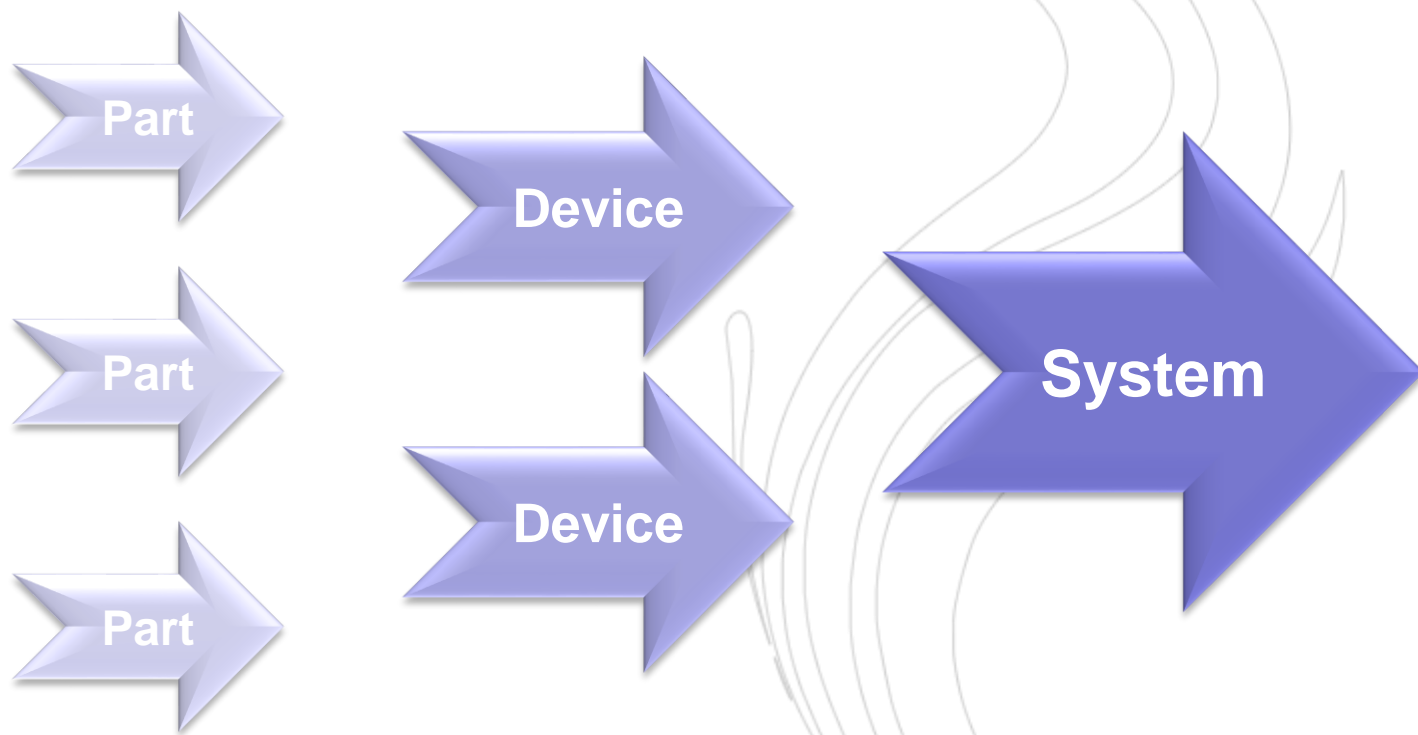


# 标准化生物模块——生物积木




# 标准化生物模块——生物积木


- [http://partsregistry.org/Main\\_Page](http://partsregistry.org/Main_Page)









**Promoters (?)**: A promoter is a DNA sequence that tends to recruit transcriptional machinery and lead to transcription of the downstream DNA sequence.




**Ribosome Binding Sites (?)**: A ribosome binding site (RBS) is an RNA sequence found in mRNA to which ribosomes can bind and initiate translation.




**Protein domains (?)**: Protein domains are portions of proteins cloned in frame with other proteins domains to make up a protein coding sequence. Some protein domains might change the protein's location, alter its degradation rate, target the protein for cleavage, or enable it to be readily purified.




**Protein coding sequences (?)**: Protein coding sequences encode the amino acid sequence of a particular protein. Note that some protein coding sequences only encode a protein domain or half a protein. Others encode a full-length protein from start codon to stop codon. Coding sequences for gene expression reporters such as LacZ and GFP are also included here.




**Translational units (?)**: Translational units are composed of a ribosome binding site and a protein coding sequence. They begin at the site of translational initiation, the RBS, and end at the site of translational termination, the stop codon.




**Terminators (?)**: A terminator is an RNA sequence that usually occurs at the end of a gene or operon mRNA and causes transcription to stop.




**DNA (?)**: DNA parts provide functionality to the DNA itself. DNA parts include cloning sites, scars, primer binding sites, spacers, recombination sites, conjugative transfer elements, transposons, origami, and aptamers.




**Plasmid backbones (?)**: A plasmid is a circular, double-stranded DNA molecules typically containing a few thousand base pairs that replicate within the cell independently of the chromosomal DNA. A plasmid backbone is defined as the plasmid sequence beginning with the BioBrick suffix, including the replication origin and antibiotic resistance marker, and ending with the BioBrick prefix.



**Plasmids (?)**: A plasmid is a circular, double-stranded DNA molecules typically containing a few thousand base pairs that replicate within the cell independently of the chromosomal DNA. If you're looking for a plasmid or vector to propagate or assemble plasmid backbones, please see the set of [plasmid backbones](#). There are a few parts in the Registry that are only available as circular plasmids, not as parts in a plasmid backbone, you can find them here. Note that these plasmids largely do not conform to the BioBrick standard.



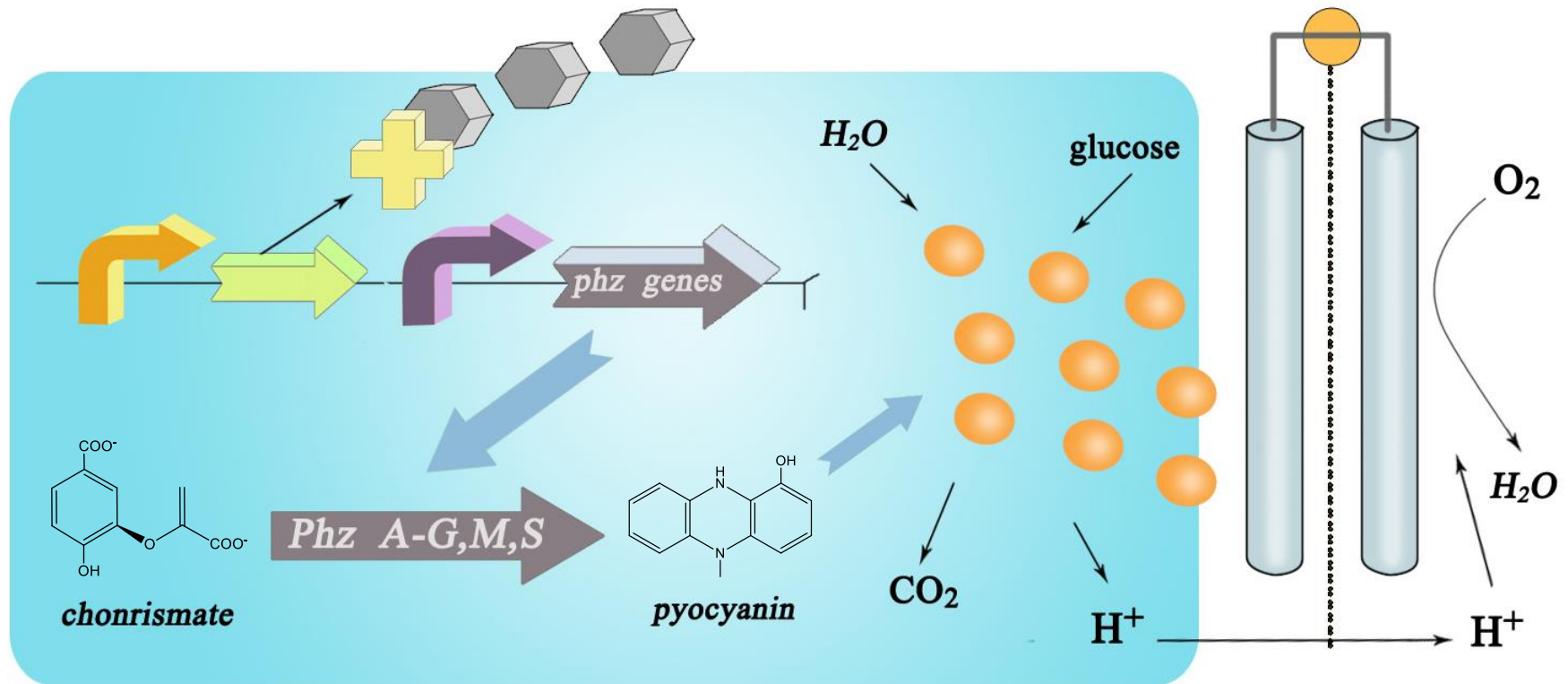
**Primers (?)**: A primer is a short single-stranded DNA sequences used as a starting point for PCR amplification or sequencing. Although primers are not actually available via the Registry distribution, we include commonly used primer sequences here.



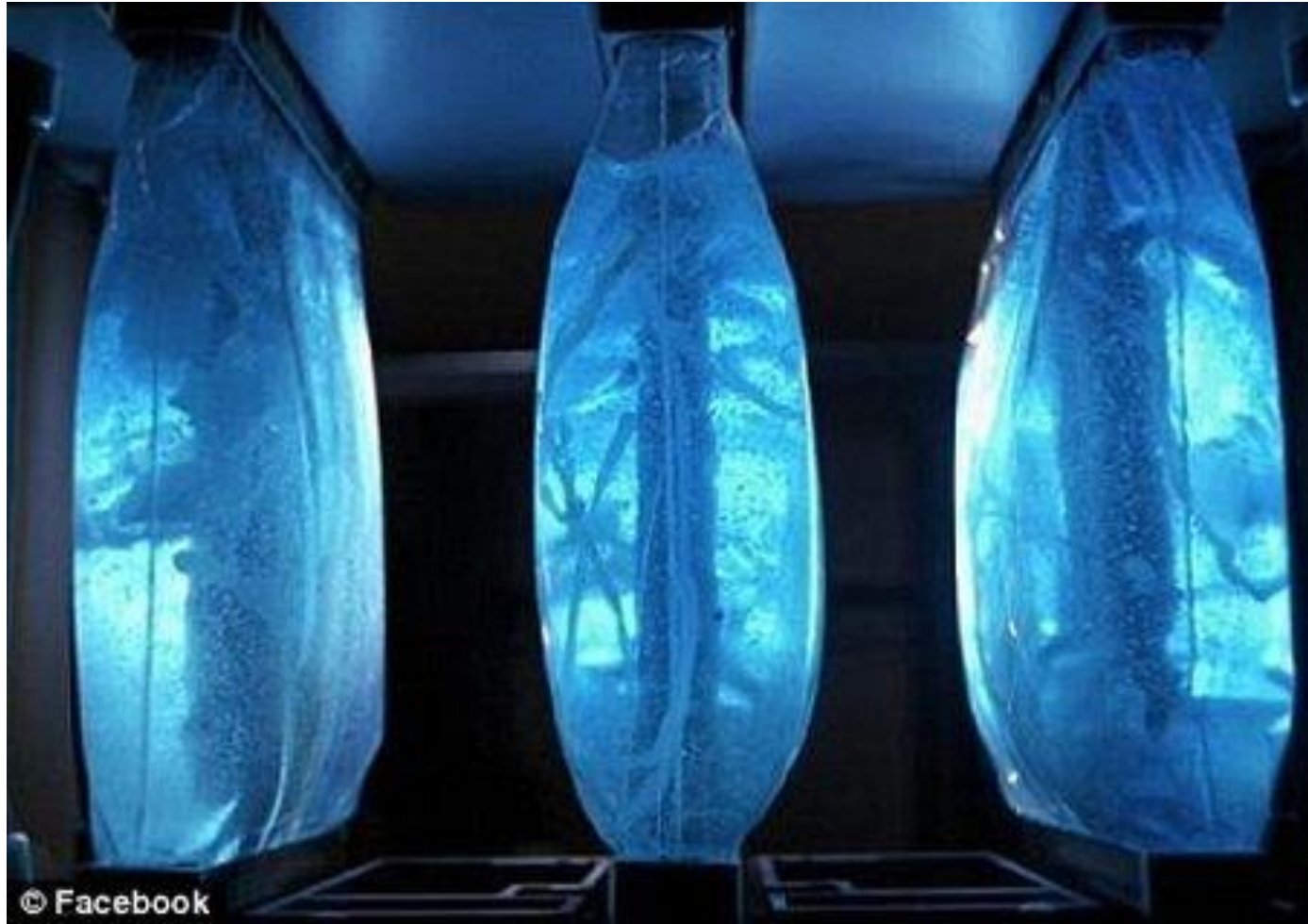
**Composite parts (?)**: Composite parts are combinations of of two or more BioBrick parts.

# 芳香烴類污染物的檢測

苯、甲苯、苯酚等



# 微型生物计算机可在体内监测我们的健康



# 微型生物计算机可在体内监测我们的健康

