**任务1**

处理PathwayCommons11.All.hgnc.sif文件，目的在于将原文件中第二列表示相互作用类型的关键字，从BioPAX体系转换为PMapp体系。也即进行简单的查询和替代，并给出每种替换发生的次数填在下表。转换对应关系见下表：

|  |  |  |
| --- | --- | --- |
| 转换前字符串 | 转换后字符串 | 转换数目 |
| controls-state-change-of | SR |  |
| controls-phosphorylation-of | SRp |  |
| controls-expression-of | ER |  |
| in-complex-with | CAI |  |
| controls-transport-of | TR |  |
| controls-transport-of-chemical | TRc |  |
| chemical-affects | ca |  |
| interacts-with | MI |  |
| used-to-produce | sp |  |
| consumption-controlled-by | sE |  |
| controls-production-of | Ep |  |
| catalysis-precedes | EF |  |
| reacts-with | rw |  |

难点在于如何处理“controls-transport-of”和“controls-transport-of-chemical”这两个替换的先后关系，得到正确结果。