

# 1 | INTRODUCTION

## 1.1 Eroom's Law: The increasing cost of drug discovery

Throughout the last 70 years the cost of developing a new drug has steadily increased. Scannell *et al.* observed that the cost to develop a new drug has approximately doubled every 9 years<sup>Scannell2012</sup>. This observation has been dubbed “Eroom's law”, a homage to Moore's law – an observation that the number of transistors in microprocessors approximately doubles every 2 years. The cost of bringing a new drug to market is now approaching £1 billion, taking 10 years from initial concept to approval. The reasons behind this every-increasing cost are multi-faceted. One explanation may be that the low-hanging fruit has been taken, effective long-standing remedies have been studied and commercialised, obvious natural products screened, and we are now tackling the more complex diseases and pharmacological targets.

## 1.2 Phenotypic Screening

## 1.3 High Content Imaging

### 1.3.1 High Content Profiling