IMAGE INFORMATICS APPROACHES TO ADVANCE CANCER DRUG DISCOVERY

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DECLARATION

This thesis presents my own work, and has not been submitted for any other degree or professional qualification. Wherever results were obtained in collaboration with others, I have clearly stated it in the text. Any information derived from the published work of others has been cited in the text, and a complete list of references can be found in the bibliography. Published papers arising from the work described in this thesis can be found in the appendices.

– Scott Warchal, 2018

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2D Two-dimensional

3D Three-dimensional

1 INTRODUCTION

1.1 Eroom's Law

Throughout the last 100 years the cost of developing new therapeutics has continued to increase. The cost of developing an approved drug in 2018 is approximately £1 billion, this is calculated by the total spent on research and development divided by the number of approved drugs, therefore including the costs of therapeutics that failed and never reached the clinic. The reasons behind this are multi-faceted and complex. The early discoveries may have picked the low-hanging fruit; the increasing costs of approval and clincial trials; ...

1.2 Phenotypic Screening

1.3 High Content Imaging