



AstraZeneca Accelerate Drug Discovery with Tessella Software Engineering & Image Analysis Expertise

When AstraZeneca needed skilled resource to develop custom rule sets for their Definiens image analysis system they called on Tessella's unique blend of experience in data management, image analysis, life sciences R&D, and professional software development. The solution has cut the time needed to accurately analyse tissue samples by up to two thirds compared with manual counting. This, combined with improved consistency and the ability to process higher levels of cellular resolution, has enabled AstraZeneca to accelerate the overall drug discovery process.

Background and Challenge

AstraZeneca is one of the world's leading pharmaceutical companies, with the mission to make a meaningful difference to patient health through the development of innovative and effective medicines. The company employs nearly 62,000 people and is active in over 100 countries, including major R&D facilities and corporate headquarters in the UK.

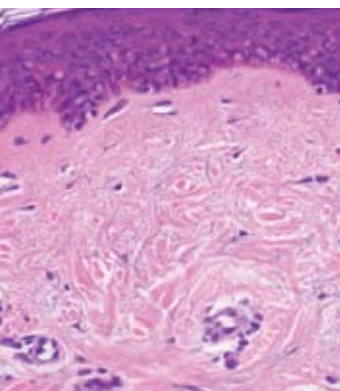
AstraZeneca invests \$4 billion each year in the discovery and development of prescription medicines for six important areas of healthcare, which include some of the world's most serious illnesses: cancer, cardiovascular, gastrointestinal, infection, neuroscience, respiratory and inflammation.

Jo Francis, Associate Principal Scientist, at AstraZeneca's Advanced Science Technology Laboratory takes up the story "Automated image

analysis of tissue samples now plays an important role in speeding up our drug discovery process. As well as significantly increasing the number of samples we can analyse compared to working manually, it also provides us with more quantifiable and consistent results".

AstraZeneca were already using Definiens' image analysis software, but as demand for the service increased as well as the requirement to undertake more complex analysis, such as detailed cell morphology, the team realised they needed additional expertise to help them develop and properly document advanced rules sets, as well as expertise in storing, archiving and managing the large volumes of image data being captured.

Jo continues, "The increased demand was going beyond our ability to keep up, and as pathologists we felt our time was better spent on the science rather than programming and data management. We also needed a resource that could be flexible,



sometimes working full-time on the system, and then less at other times, depending on where we were in the drug discovery cycle.”

Solution and Benefits

Following a short selection process, Tessella was chosen to work with the AstraZeneca team. Jo adds “Tessella were a natural choice. Not only did they have the professional software development and data management skills we required, but also, more importantly, extensive experience in image/data analysis and life sciences R&D. This enabled them to very quickly become part of the team, contribute new ideas and translate our requirements into reality”.

Tessella has developed an extensive library of custom rule sets for the AstraZeneca Definiens system, which is capable of the automated batch analysis of over 5000 different tissue samples. In particular, Tessella’s expertise in the analysis and management of large volumes of image data has enabled AstraZeneca to process higher levels of cellular resolution. This means the team can fully analyse morphological changes such as cell shape, size and colour, which provides a deeper insight into how drug candidates are driving change.

Jo continues “As well as being able to significantly increase the throughput of our analysis compared to manual counting, we now have the ability to make earlier, more informed drug prioritisation decisions by analysing and validating drug-target interaction. All this serves to reduce the cost, and increase the speed and accuracy of our drug discovery process”.

Future

Jo concludes “With Tessella’s support and expertise we have been able to really maximise the value of our Definiens image analysis system. They are very much part of the team, freeing up our time to focus on the science rather than the rule set development, data management and IT house-keeping tasks. We are also beginning to share this vital image analysis resource with our global R&D community

in, for example, Sweden and China. This further leverages our investment in the Definiens system as well as Tessella’s unique blend of scientific software expertise”.

Requirements

- A flexible and skilled resource to develop custom rule sets and manage large volumes of image data for the automated batch analysis of tissue samples including detailed cellular resolution
- Scientific software partner with proven expertise in data management, image analysis, life sciences R&D, and algorithm/rule set development.

Benefits

- Cut the time needed to accurately analyse tissue samples by up to two thirds compared with manual counting.
- Enabled the team to make more informed drug prioritisation decisions by analysing more detail, including morphological changes such as cell shape, size and colour.
- Freed up pathologist time to focus on the science rather than programming, data management and IT house-keeping tasks.
- Enabled AstraZeneca to maximise the value and investment in Definiens image analysis software
- Accelerating the drug discovery process

For further information on Tessella’s solutions and technologies, visit www.tessella.com

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