# List of thesis corrections

*Abstract* – rewrite in the style of a book blurb. Make people want to read the thesis after reading the abstract. Set up the problems and challenges, then discuss how I went about tackling them. Tell the story, make it more prose than just a summary of each chapter. And show the potential of the work for future developments

*P2* – consider other downsides of EM for live cell biology: vacuum, cryo temperatures

*P2* – Be clearer that absolute values are examples or typical values

*P3* – again, example values, and ‘3D impossible’ – more clarity

*P4* – mention other 3D STORM techniques, show that quoted values are examples

*P4* – paragraph 2 would be better in Structure of Thesis

*P5* – add a scalebar and show what is or is not resolvable

*P9* – merge abstract into aims and structure

*P11* – Be less hand-wavey about TIRF description – add in equation showing decay of evanescent field, talk about critical angle, and HiLo/grazing incidence

*P12* – note 100nm is example value in figure caption

*P13* – Reconsider optical sectioning equations. In-focus contrast comes from harmonics generated by non-linear squaring/square-root/modulus terms. Review 2015 Shaw/O’Holleran Methods

*P20* – would be helpful to show a line profile through two close beads, showing that they can now be resolved when they couldn’t before

*P20* – rotational symmetry in *increased*, though the OTF is still not completely rotationally symmetric. Clarify in caption and text.

*P22* – Note that this microscope was build on a commercial Olympus frame, with a commercial filter wheel, optosplit, camera, ASI stage

*P24* – autofocus system from ASI is a commercial product

*P25* – reference O’Holleran/Shaw Pockels cell work (also Methods 2015)

*P33* – clarify that strobing is an alternative to reducing laser power. Lower duty cycle may be better for fluorophore bleaching than lower power – run an experiment or find a reference?

*P33* – more clarity about TIRF mode and contrast of stripe pattern

*P41* – Labstep timeline screenshots should go in an Appendex – could also put some LabVIEW code showing how it is implemented in there too

*P43* – More details on GPU speedup, and show some of the code in an Appendix

*P45* – Show some of this code in an appendix too

*P46* – Add SIM check/SQUIRREL to the Fiji plugin to give users a numerical measure of their reconstruction quality and understand what artefacts may be present

*P55* – consider how we can use beads to assess reconstruction quality and consistency across the field of view

*P63* – explain the image is a 3X3 mosaic, allowing us to capture the full size of the large MEF cell

*P67* – used SIM for its high-throughput, mutlicolor; STED might be better in the future

*P71* – would be nice to see some LAG SIM data in Chapter 3

*P98* – more clarity on the upload process

*P116* – explain this graph in more detail, particularly mention lipofectamine is the current gold standard – which we haven’t quite beaten yet

*P117* – mention lipofectamine as the current gold standard

*P124* – put more background details about the flow calculations into an appendix, including details on FRET

*P127* – other valid methods of classification could be binary morphology and fitting line segments

*P128* – clarify whether image is SIM or widefield

*P131* – measure in W/cm2

*P136* – clarify how figure 5.11 agrees with experimental data

*P137* – Mention potential use of EM to help build correct parameters for models

*Conclusion* – can be more speculative here. Talk about potential developments of the work in the future – who’s going to take it on, what difference is it going to make? Highlight that OMERO have already integrated FPBioimage into their suite of software. Plant ideas for what the work could do in the future.

# Personal corrections – typos etc.

|  |  |
| --- | --- |
| **Correction** | **Complete?** |
| Abstract: paragraph 3: colleagues’ | Y |
| Abstract: paragraph 5: ‘understanding of fundamental…’ | Y |
| List of figures: 2.2: ‘out-of-focus’ | Y |
| List of figures: 4.10: CellProfiler | Y |
| List of code snippets: 3.3 formatting | Y |
| List of symbols: HSV-1: Herpes Simplex Virus Type 1 | Y |
| p. 2 paragraph 4: fluorescent | Y |
| p. 3 paragraph 3: 2D | Y |
| p. 12 paragraph 3: Herpes Simplex Virus Type 1 | Y |
| p. 15 Figure 2.2: HSV-1 | Y |
| p. 18: italic x’s | Y |
| p. 19 paragraph 2: italic x’s | Y |
| p. 23: binary grating | Y |
| p. 26: tidy up figure | Y |
| p. 27 bullet 5: rotate the polariser | Y |
| p. 27 paragraph 4: comma | Y |
| p. 29: Pockels cell provides full 180° rotation | Y |
| p. 33 paragraph 2: orange, blue | Y |
| p. 33 paragraph 3: control | Y |
| p. 35 paragraph 2: \times symbol | Y |
| p. 37 paragraph 1: formatting of Live mode | Y |
| p. 38: full stop | Y |
| p. 39 paragraph 2: switch | Y |
| p. 39 paragraph 4: citation of JOVE paper | Y |
| p. 42 paragraph 4: ImageJ | Y |
| p. 43 paragraph 2: separates, sends, add example MATLAB/cmd command | Y |
| p. 43 paragraph 7: as shown in Section 2.6.2 | Y |
| p. 44 paragraph 2: cite ImageJ | Y |
| p. 45 Figure 2.15: Fiji (formatting for consistency) | Y |
| p. 46 paragraph 3: comma | Y |
| p. 53: add image examples of OTF attenuation, give example values | Y |
| p. 53 paragraph 3: delete *can and* | Y |
| p. 53: Multi-colour (dash for consistency) | Y |
| p. 56 paragraph 6: delete *to ensure a high signal to noise ratio* | Y |
| p. 71 paragraph 2: reputable | Y |
| p. 72 paragraph 1: incorrect quote marks (formatting) | Y |
| p. 74 paragraph 2: 1x10^*9* | Y |
| p. 80 paragraph 1: placed | Y |
| p. 81 snippet 3.3: Update() | Y |
| p. 82 snippet 3.4: Update() | Y |
| p. 85 paragraph 2: and also | Y |
| p. 106 paragraph 2: although, genetic | Y |
| p. 107 paragraph 6: delete *and* | Y |
| p. 108 paragraph 2: used | Y |
| p. 112 paragraph 2: cite JACS paper | Y |
| p. 113 paragraph 2: the | Y |
| p. 113 paragraph 3: acid | Y |
| p. 113 paragraph 6: delete repeated *mark* | Y |
| p. 118 paragraph 5: of | Y |
| p. 124 figure 5.1: solid | Y |
| p. 127 figure 5.3: Note these images are a selection from a more detailed timelapse, and these examples are not evenly spaced | Y |