

Appendix I: Questionnaire

1. Do you currently use or plan to use imaging techniques in your research or work?

- Yes, currently use
- Plan to use: Within 6 months
- Plan to use: Within 12 months
- Plan to use: In more than 12 months
- Do not use or plan to use (*screened out of survey*)

2. What is the purpose of your research?

- Basic research
- Target validation
- Clinical diagnostics
- Drug screening
- Lead characterization
- Forensics
- Other (Please specify)

3. Which of the following do you currently use / plan to use in your imaging experiments?

	Currently Use	Plan to Use
Cell lines		
Primary cells		
Whole animals		
Organs		
Tissues		
Plants		
Gels / blots / arrays		
Other (Please specify)		

4. What cell types and cell lines do you currently use / plan to use?

Cell Line	Cell Type (Please specify below)
Epithelial-like cells (HeLa, CaCo2)	
Fibroblast-like cells (HEK 293, Cos-7)	
Hepatocyte-like cells (HEPA-1, HepG-2)	
Neuroblastoma (CLBPEC, SHEP)	
Leukemia cells/lymphoblasts (Jurkat, K562)	

Cell Line	Cell Type (Please specify below)
Melanoma	
Monocytes/macrophages	
Myotubes/myoblasts/muscle cells	
Keratinocytes	
Primary cells	
Other (Please specify)	
Don't know/can't remember	

**5. Which of the following applications do you currently run / plan to run in your cellular work?
(Select all that apply)**

	Currently Run	Plan to Run
Apoptosis		
Cell count		
Cell cycle		
Cell differentiation		
Cell migration		
Cell morphology		
Cell proliferation		
Cell surface markers		
Cell viability		
Cellular signal		
Cytotoxicity		
Fluorescence protein expression		
Gene reporter		
Ion flux		
Kinetic analysis		
Organelle localization and function		
Receptor binding studies		
Second messenger		
Sub-population analysis		
Translocation / trafficking		
Other (Please specify)		
None of the above		

6. Which of the following equipment do you currently use / plan to use? (Select all that apply)

	Currently Use	Plan to Use
Fluorescence microscope		
Confocal microscope		
Light microscope		
Electron microscope		
High content analysis system		
Molecular imaging/ <i>in vivo</i> imaging system		
Other (Please specify)		

7. Who is the manufacturer of your[Imaging Instrument]? (Select all that apply)

There will be a separate question for each instrument type selection in Q6.

- Andor Technology
- Applied Precision
- BD Biosciences (formerly Atto Biosciences)
- Biomedical Photometrics
- Carl Zeiss
- Cellomics / Thermo Fisher Scientific
- FUJIFILM Life Science
- GE Healthcare (formerly Amersham Biosciences)
- Kodak Molecular Imaging Systems (now Carestream Molecular Imaging)
- Kubtec
- Leica
- LI-COR Biosciences
- Molecular Devices (now part of MDS Analytical Technologies)
- Motic
- Nikon
- Olympus
- PerkinElmer
- I don't know / can't remember
- Other (Please specify)

8. Please indicate how long ago this microscope or imaging system was purchased?

Separate drop down for each equipment type selected

- Less than 6 months ago
- 6 months to 1 year ago
- 1 to 2 years ago
- 2 to 3 years ago

- 3 to 4 years ago
- 4 to 5 years ago
- More than 5 years ago
- I don't know/can't remember

9. Which of the following detection technologies do you use? Please rank your selections (1 = Most frequently used)

- Labeled antibodies
- Cell stains (e.g. hematoxylyn, eosin, etc.)
- Radioactive dyes
- Fluorescent dyes
- Quencher dyes
- FRET
- pH sensitive dyes
- Quantum dots (i.e. nanospheres)
- Other (please specify)

10. Do you use a digital camera that is the same brand as your microscope / imaging system to document images?

- Yes
- No
- Do not use a digital camera

11. (If yes) Would you consider a future upgrade to another camera model, or does your existing camera cover all of your imaging needs?

- Yes, I see reason for a future upgrade
- No, my current camera covers all of my imaging needs

12. Please indicate what brand digital camera you use. (Select all that apply)

- Andor Technology
- Apogee
- Canon
- Carl Zeiss
- CRi
- Diagnostic Instruments (SPOT)
- Hamamatsu
- Kodak
- Leica
- Lumenera
- Motic

- Olympus
- Optronics
- Nikon
- Panasonic
- Photometrics / Roper
- Pixelink
- Polaroid
- QImaging
- Redlake
- Sony Electronics
- Other (Please specify)
- I don't know/can't remember

13. What level of resolution do you find adequate in a cellular imaging documentation system or camera?

- 1 – 2 megapixel
- 2 – 4 megapixel
- 4 – 6 megapixel
- 6 – 8 megapixel
- 8 – 10 megapixel
- 10 – 12 megapixel
- 12+ megapixel

14. What digital camera frame rate do you require?

- Less than 1 fps (frame per second)
- 1-10 fps
- 11-30 fps
- Over 30 fps

15. Which connectivity interface do you prefer?

- PCIe Card
- USB 2.0
- Firewire
- GigE
- Any plug-n-play (USB2.0, FireWire, GigE)
- Don't know/don't care/not a purchasing requirement

16. Typically, what is the price/budget range for your digital camera purchases?

- Under \$5,000
- \$5,000 - 10,000
- \$11,000 - 15,000
- \$16,000 - 20,000
- Over \$20,000

17. Which of the following sensor technologies best meets your needs?

- CCD
- CCD-Interline (eg Sony ICX 285)
- EMCCD (electron multiplying)
- ICCD (intensified)
- EBCCD (electron bombardment)
- CMOS
- Other (APDs, PDAs) (Please specify)

18. When deciding on a digital camera, which of the following factors ranks most highly in your purchasing decision? Please rank in order of importance (1 = Most important)

- Brand recognition
- Recommendation from peer in the same field of research
- Vacuum/cooling capability of the camera
- Interface options (e.g. USB, Firewire)
- 3rd party software compatibility
- Relationship with local representatives of the camera
- Quality/support reputation of the manufacturer
- Other (Please specify)

19. How important is a manufacturer's warranty in your purchase decision?

- Not at all important
- Somewhat important (A contributing factor)
- Very important (Absolutely essential)

20. How often do you buy a service contract (beyond the standard warranty) for your equipment? (Either at the time of purchase or at a later date)

- Never
- Sometimes
- Always

21. Which best describes how you budget for support / service contracts?

- Common pool /purchasing department
- Ongoing maintenance budget for my lab
- Apply for funding separately

22. For what length of time would you purchase a typical service contract?

- 1 year
- Up to 3 years
- 3 years or more

23. How much would you be prepared to spend on a service contract per year?

- Up to 5% of camera / system price
- 5 to 10% of camera / system price
- Over 10% of camera / system price

24. What areas of service support are most important?

(Please rank from 1 to 4, 1 = Most important)

- Service on-site
- Product only
- Software
- Application

25. Do you use image analysis software to extract quantitative information from your images?

- Yes
- No

26. What software do you use predominantly for your analysis?

- Software provided by the instrument manufacturer
- Software provided by a third party supplier (or open source)

27. Which third party software do you primarily use for image analysis? (single choice)

Supplier	Software Name
Andor Technology	iQ
Applied Precision	DeltaVision softWoRx
Bitplane	Imaris
Definiens	Cellenger
Empix Imaging	Northern Eclipse
MCID	MCID
Improvision	Openlab
Improvision	Volocity
Intelligent Imaging Innovations	Slidebook Pro
Leica	QWin
Media Cybernetics	AutoQuant
Media Cybernetics	ImagePro
Molecular Devices	Metamorph
Molecular Devices	MetaXpress
Nikon	NIS
Olympus	Cell^ Series

Open Source	ImageJ
Open Source	NIH Image
Open Source	XCOSM
Open Source	µManager
Zeiss	Axiovision
In-house written software	
Other (Please specify)	

28. How would you rate your imaging supplier / software on the following features?

1 = Excellent 2 = Very good 3 = Neutral 4 = Good 5 = Fair 6 = Poor 7 = I don't know

- Range of features
- Price / Performance
- Ease of use
- Training
- Support
- Automation of analysis

29. Do you use any software for image deconvolution / restoration and 3D visualization?

- Yes
- No

30. Which supplier do you use for deconvolution / restoration software?

Supplier	Software Name
Andor Technology	iQ
Applied Precision	DeltaVision softWoRx
BD Biosciences	Cytoprint
Bitplane	Imaris
Empix Imaging	Northern Eclipse
MCID	MCID
Improvision	Openlab
Improvision	Velocity
Intelligent Imaging Innovations	Slidebook Pro
Leica	QWin
Media Cybernetics	AutoQuant

Media Cybernetics	ImagePro
Mercury	Amira
Molecular Devices	Metamorph
Molecular Devices	MetaXpress
Nikon	NIS
Olympus	Cell^ Series
Open Source	Bioimage XD
Open Source	ImageJ
Open Source	NIH Image
Open Source	XCOSM
Open Source	µManager
SCI	Huygens
Vaytek	Microtome
Vaytek	VoxBlast
Zeiss	Axiovision
In-house written software	
Other (Please specify)	

31. How would you rate your imaging supplier / software on the following features?

1 = Excellent 2 = Very good 3 = Neutral 4 = Good 5 = Fair 6 = Poor 7 = I don't know

- Quality & speed of deconvolution
- Quality & speed of 3D visualization
- Price / Performance
- Ease of Use
- Training
- Support

32. How important are the following analysis methods to you? (1 = Very important, 5 = Not important, 6 = I don't know)

- Cell counting
- Morphological measures (e.g. length, diameter etc)
- 2D Intensity measures
- 3D volume and density measures
- Co-localization analysis
- Tracking cell movement over time
- Phenotypic classification of cells
- Tissue analysis
- Tissue classification

33. How many images do you generate per week?

- Less than 10
- 10 to 100
- 101 to 1000
- 1001 to 5000
- 5001 to 10000
- More than 10000

34. How do you manage your image data?

- By using a database provided by the instrument manufacturer
- By using a database provided by the supplier of the analysis package
- By using a commercial third party database (please write in)
- By using an open source solution
- By using an in house developed solution
- By using the Windows file system
- Other method (Please specify)

35. Which *in vivo*/molecular imaging system do you use?

- CRi
- GE Healthcare/ART
- Kodak Molecular Imaging Systems (now Carestream Molecular Imaging)
- Kubtec
- LI-COR Biosciences
- Olympus
- Xenogen/Caliper
- Other (please specify)

36. How important to you are the following features of an *In Vivo*/Molecular Imaging System? (1 = Very important, 5 = Not at all important, 6 = Don't know)

- Low background
- Ability to image a wide range of animal sizes
- Ability to image a wide range of tissue types
- Multiplexing capability

37. How satisfied are you with your current *In Vivo*/Molecular Imaging System on these features? (1 = Very satisfied, 5 = Not at all satisfied, 6 = Don't know)

- Low background
- Ability to image a wide range of animal sizes
- Ability to image a wide range of tissue types
- Multiplexing capability

38. Do you use bioluminescence or fluorescence reporters in your in vivo imaging experiments? Which do you prefer to use?

- Bioluminescence
- Fluorescence
- Fluorescence reporter genes (e.g. GFP, RFP)

39. What type of labeled optical agents would be useful for your research?

- Antibody
- Peptide
- Protein
- Small molecule or ligand
- Cell or virus
- Other (Please specify)

40. Which of the following automated high content analysis suppliers and imagers are you aware of, if any?

Supplier	Instrument
Applied Precision	CellWorX
Applied Precision	Don't know the name of the instrument
Axon	ImageXpress
Axon	Don't know the name of the instrument
Beckman Coulter	EIDAQ
Beckman Coulter	Don't know the name of the instrument
Becton Dickinson	Pathway 415
Becton Dickinson	Pathway 435
Becton Dickinson	Pathway 855
Becton Dickinson	Don't know the name of the instrument
Cellomics	CellWorX
Cellomics	Array Scan
Cellomics	Kinetic Scan
Cellomics	Don't know the name of the instrument
Evotec	Opera
Evotec	Don't know the name of the instrument
GE Healthcare / Amersham	In Cell 1000
GE Healthcare / Amersham	In Cell 3000
GE Healthcare / Amersham	Don't know the name of the instrument

Supplier	Instrument
Genetix	Cell Reporter
Genetix	Don't know the name of the instrument
Imstar	Pathfinder Cellscan
Imstar	Pathfinder Wellscan
Imstar	Don't know the name of the instrument
Maia Scientific	MIAS-2: Multimode Microscopy Reader
Maia Scientific	Don't know the name of the instrument
Molecular Devices	Discovery 1
Molecular Devices	ImageXpress MICRO
Molecular Devices	ImageXpress Ultra
Molecular Devices	ImageXpress 500A
Molecular Devices	Don't know the name of the instrument
Q3DM	EIDAQ
Q3DM	Don't know the name of the instrument
None of the above	

41. Has your company / organization purchased an automated high content analysis system in the past 1 to 2 years?

- Yes
- No
- I don't know

42. Which automated HCA instrument/s has your company/organization purchased in the last 1 to 2 years? (same response options as in Q39)

43. How likely is your company/organization to purchase an additional automated HCA imager in the next 1 to 2 years?

- Very likely
- Somewhat likely
- Neither likely nor unlikely
- Somewhat unlikely
- Very unlikely
- I don't know

44. What is the maximum confocal resolution possible with the fluorescent bench top confocal imager that you use?

- >9 microns
- 5-7 microns
- 1-3 microns
- Other (Please specify)
- Don't Know

45. Which of the following technologies do you plan to adopt/systems you plan to purchase and what is your purchasing timeframe?

- | <i>Within 3 months</i> | <i>Within 6 months</i> | <i>Within 12 months</i> | <i>In more than 12 months</i> |
|--|------------------------|-------------------------|-------------------------------|
| - Fluorescence microscope | | | |
| - Confocal microscope | | | |
| - Light microscope | | | |
| - Electron microscope | | | |
| - High content analysis system | | | |
| - <i>In vivo</i> /molecular imaging system | | | |
| - None of the above | | | |

46. How much do you have budgeted (in \$US) for cellular imaging equipment and software in the next year?

- \$0K
- Less than \$10,000
- \$10,000 to \$50,000
- \$50,000 to \$100,000
- More than \$100,000
- I don't know

Demographic Questions

1. In which type of institution do you work?

- Academic
- Pharmaceutical
- Private Research
- Biotechnology
- Government
- Clinical - Other (please specify)

2. Which title best applies?

- Professor/Instructor
- Lab Manager/Supervisor
- Business Development Director/Manager
- Department Head
- Account Manager
- Staff Scientist
- President/CEO/Owner/VP
- Postdoctoral Fellow
- Consultant
- Product Manager
- Process Engineer
- Research Associate
- Research Director/VP of Research
- Technician/Research Assistant
- Graduate Student
- Principal Investigator
- Lab Director/Chief Scientist
- Procurement Manager
- Other

3. Which of the following are your key areas of research or work?

- Bioinformatics
- Genomics/Genetics
- Drug Discovery
- Marketing/Sales
- Bioengineering
- Biomufacturing /Process Development
- Microbiology/Virology
- Cell Biology
- Administration
- Pharmacology/Toxicology
- Neuroscience
- Purchasing
- Cell Signaling
- Immunology
- Diagnostics/Pathology
- Biochemistry
- Molecular Biology
- Proteomics
- Other

4. Which best describes your purchasing authority?

- Authorize
- Recommend
- Evaluate
- No Purchase Role