

Research Infrastructure Scheme: Supporting Collaborative

Infrastructure or Network Lab Project Application for Funding in 2018

Faculty	Medicine	
Family Name, Lead Investigator <small>(Please only name ONE person here)</small>	Kelleher, Anthony	
Project Type	<input checked="" type="checkbox"/> Faculty Infrastructure Project <input type="checkbox"/> Mark Wainwright Analytical Centre Infrastructure Project <input type="checkbox"/> Network Lab For any of the above, please indicate: <input checked="" type="checkbox"/> 1-year or <input type="checkbox"/> 2-year project	
Project title <small>(Please chose a title descriptive of the infrastructure requested)</small>	4 laser, 16-colour cell sorter and class II biosafety cabinet	
Amount requested centrally (ex GST) <small>(For 2-year projects, detail the amount requested in each year)</small>	2018 \$495 000	2019 \$
School / Faculty approved contribution, if applicable	2018 \$	2019 \$

RESEARCH INFRASTRUCTURE SCHEME: *Supporting Collaborative Research*

Application Form for Funding Support in 2018

When completing this application, please refer to the scheme's guidelines.

Applications must be lodged with the relevant School Office as a **single pdf** file by **18 September 2017** and must include:

- **A completed and signed Site and Services Checklist:** The lead investigator is asked to complete the checklist, sign the document as 'Project Lead' and obtain sign-off by the relevant Head of School as 'Sponsor' (refer to the checklist for instructions).
- **Suppliers' quotes for items to be purchased:** See Section 8 for details.

The Site and Services Checklist, quote templates, guidelines and other resources for this scheme are available at <https://research.unsw.edu.au/unsw-research-infrastructure-scheme>. Additional contacts for advice and assistance are listed at the end of this form.

Use this form for **Faculty or MWAC Infrastructure and Network Lab Projects** only. There is a separate form for **cross-Faculty Infrastructure Projects**, which involve **funding** from more than one Faculty or joint Faculty/ MWAC proposals.

1 APPLICANT(S)

1.1 Lead Investigator

The Lead Investigator is the project lead and will be the key contact person for the application for all correspondence. This should be the same person listed as under 1* in the tables below. **Please only name ONE person here.**

Applicant number	Family name	Given Name(s)	Phone	Email
1*	Kelleher	Anthony	x 52451 or x 59915	akelleher@kirby.unsw.edu.au

1.2 Applicant Summary (add additional rows if required)

Applicant number	Family name	Given Name(s)	Centre/ School/Faculty or Department	Email
1*	Kelleher	Anthony	IVPP, Kirby Institute	akelleher@kirby.unsw.edu.au
2	Munier	C. Mee Ling	IVPP, Kirby Institute	cmunier@kirby.unsw.edu.au
3	Zaunders	John	IVPP, Kirby Institute	jzaunders@kirby.unsw.edu.au
4	Turville	Stuart	IVPP, Kirby Institute	sturville@kirby.unsw.edu.au
5	Ahlenstiel	Chantelle	IVPP, Kirby Institute	cahlenstiel@kirby.unsw.edu.au
6	Lloyd	Andrew	VISP, Kirby Institute	a.lloyd@unsw.edu.au
7	Boecking	Till	SOMS	till.boecking@unsw.edu.au
8	Luciani	Fabio	SOMS	luciani@unsw.edu.au
9	Bull	Rowena	SOMS	r.bull@unsw.edu.au

10	Tedla	Nicodemus	SOMS	n.tedla@unsw.edu.au
11	Rodrigo	Chaturaka	SOMS	c.rodrigo@unsw.edu.au
12	Power	Carl	BRIL, MWAC	c.power@unsw.edu.au
13	Cysique	Lucette	NeuRA	lcysique@unsw.edu.au
14	Suzuki	Kazuo	St Vincent's Centre for Applied Medical Research	k.suzuki@amr.org.au
15	Xu	Yin	IVPP, Kirby Institute	yxu@kirby.unsw.edu.au
16	Polizzotto	Mark	TVRP, Kirby Institute and St Vincent's Hospital	mpolizzotto@kirby.unsw.edu.au
17	Rawlinson	William	SOMS and Virology Research Laboratory, NSW Health Pathology	w.rawlinson@unsw.edu.au
18	Goodnow	Christopher	Garvan Institute of Medical Research	c.goodnow@garvan.org.au
19	Phan	Tri	Garvan Institute of Medical Research	t.phan@garvan.org.au
20	Cooper	David	Kirby Institute	dcooper@kirby.unsw.edu.au

2 EQUIPMENT, INFRASTRUCTURE OR SUPPORT REQUESTED

Provide a short description (max 1 page) of the equipment, infrastructure or support requested. For Network Labs, ensure the description includes the equipment/ facility to be supported as well as justifying the staff support requested.

Requested Equipment:

A biologically contained 4-laser, 16-colour high-speed cell sorter and a purpose designed class II biosafety cabinet to be located in the UNSW PC3 laboratory. The cell sorter will have the ability to perform up to 4-way cell sorting and single cell sorting into micro-titre plates for culturing or single cell genomics and comes with a built in aerosol management system that operates independently of the purpose built class II biosafety cabinet to ensure added biosafety protection and further reduce the risk of operator exposure.

Current infrastructure:

At present, we have a 12-year old, 3-laser, 10-colour BD FACSAria cell sorter housed within a class I biosafety cabinet within a purposed-built module of the UNSW PC3 facility. This machine is reaching the end of its life including approaching the end of service support and spare parts provided by the manufacturer. The class I biosafety cabinet in which the FACSAria is currently housed was purpose built, however is now borderline in fulfilling updated regulations and is also nearing the end of its life.

Over the past 12 years, use of this cell sorter has lead to >60 publications with >2500 citations, H-index 25 (May2017, Scopus) as well as 4 granted patents (2 fully internationally commercialized and 2 currently supported for commercialization). It has also been integral to the success of 3 successive Program grants (\$37million) 5 Project grants (\$2.7million) and 3 Development grants (\$1.6million) and one ARC Linkage grant (\$324000). Indeed, without the current cell sorter it would not have been possible to perform many experiments that have lead to these publications or patents, due to source material used which include primary samples from HIV positive individuals, SIV infected macaque samples and various human cells (both

transformed and primary) that have undergone genetic manipulation through the use of viral vectors covered by the Office of the Gene Technology Regulator monitored DNIRs and NLRDs. Also, in many cases PBMC from coded samples for which HIV/Hepatitis C status were unknown.

Justification for Equipment Request:

Cell sorting and Biosafety:

Highly specialised, flow cytometric cell sorting of biological material has become more essential for many research projects in order to isolate specific cell subsets for further investigation and the development of host directed and cellular immunotherapies such as CAR T cells. Due to the downstream functional and molecular experiments to be conducted following cell sorting, many samples are required to be sorted unfixed or “alive”. The source of these unfixed / live samples varies but includes individuals infected with HIV, Tuberculosis (TB), Hepatitis C and/or other possible emerging infectious organisms. Other source material may contain genetically modified organisms/cells (GMOs) generated through viral or nanoparticle transductions.

Recently the International Society for the Advancement of Cytometry (ISAC) have published updated Cell Sorter Biosafety Standards^[1] for the protection of instrument operators and the environment from biohazards arising from the use of cell sorters and unfixed material. These standards recommend that cell sorting of unfixed samples known to be infected with Hepatitis C occurs on machines that are contained in a class II biosafety cabinet that are located in a laboratory with at least physical containment (PC) 2 level with enhanced precautions. Cell sorting of unfixed infectious samples known to contain HIV or aerosol pathogens such as Mycobacterium tuberculosis must be performed on machines contained in a class II biosafety cabinet housed within a PC3 laboratory.

Although lentiviral transductions and subsequent isolation can take place within a PC2 containment facility with a machine contained in a class II biosafety cabinet, there are several advantages in housing and carrying out flow cell sorting in higher containment laboratories. Firstly, PC2 sorting of lentivirally transduced material, may need to undergo testing prior to flow cell sorting or be required to be chemically fixed. This can extend experiments and increase the time to actual data acquisition. Finally, not every experiment can take a prolonged period of testing to confirm lentiviral particles are absent and/or undergo a process of chemical fixation. This latter condition significantly limits the ability of our researchers to move into freshly isolated primary cells that can only be genetically manipulated using lentiviral vectors. With an exponential expansion in gene editing technologies, it is important we do not exclude the capacity to work with and sort primary cells, as observations in this context provide the best translational potential.

References:

1. Holmes KL, Fontes B, Hogarth P, Konz R, Monard S, Pletcher CH, Jr., et al. International Society for the Advancement of Cytometry cell sorter biosafety standards. Cytometry A. 2014;85(5):434-53.

3 LOCATION OF THE EQUIPMENT/ INFRASTRUCTURE/ STAFF

Provide a short description (max 1 page) indicating where the equipment/ infrastructure/ staff will be physically located. If the equipment/infrastructure will be installed “off-site”, then provide details of the physical location and address, together with a statement on fractional ownership, if applicable.

The new cell sorter will be located within a purpose-built module within the UNSW PC3 Containment Facility, level 5 east of the Wallace Wurth Building, room 541A.

4 STRATEGIC PURPOSE OF REQUEST

Provide a short description (max 2 pages) of the impact the equipment/infrastructure/staff will have on improving UNSW’s research capacity. In particular, consider how the requested infrastructure will:

- support world-leading research
- enhance collaborations, including across disciplines

- meet the strategic priorities of the Faculty and UNSW, including the university's [2025 Strategy](#)

The requested 4-laser, 16-colour high-speed cell sorter housed in a custom-tailored class II biosafety cabinet within a purpose-built module in the UNSW PC3 containment facility has the potential to mechanistically dissect the pathogenesis of many important human diseases, through the characterisation of in vivo cellular viral reservoirs and the study of the immune response in infectious diseases including but not excluded to Hepatitis C, HIV, TB and HPV infected human material. Whilst there is “potential”, the limitation to leveraging the strategic power of many emerging genomic technological advances is the ability to safely (under appropriate containment) and stringently sort primary cellular material in a state (often alive) that will give the best result. Due to the nature of the source material, including peripheral blood, lymphoid tissue and gut biopsies, this often cannot be achieved in the core facilities housed in the Biological Resources Imaging Laboratory (BRIL) Flow Cytometry Facility in the Mark Wainwright Analytical Centre (MWAC), and this is the primary motivation to renew and in turn expand the sorting capacity within the current UNSW PC3 containment facility.

World leading Research

The benefits of investment in our already world leading research will be:

- 1) increasing the capacity and productivity of our infectious disease and immunity research,
- 2) the ability to attract future funding,
- 3) foster collaborations with groups inside, and external to UNSW and
- 4) future proof any research involving emerging pathogens.

In addition to investing in our current researchers, it has the potential to facilitate the research of future strategic recruits under the Scientia scheme. For instance, at least two of the shortlisted Scientia Fellows for Medicine have a research program that would significantly benefit from this investment. It will also enhance current and foster future collaborations with the affiliated Medical Research Institutes such as the Garvan and other institutes affiliated with SPHERE and industry partners.

Enhance Collaborations and Strategic Aims of the Faculty of Medicine and UNSW:

UNSW has gained significant infrastructure and expertise in proteomics and recently in single cell genomic analysis. Coupled with this expertise, is the strong track record in the area of immunity and infectious diseases spanning basic research, translational science, clinical and epidemiological research. The combination of existing infrastructure and more importantly an expertise and knowledge base, places us at significant competitive advantage globally.

This application is important at several levels: This request aligns with the Triple I (Infection, Immunity & Inflammation) strategic theme of the faculty, the Clinical Academic stream of SPHERE and the newly established NUW alliance. Specifically, we are presently the only member of Triple I, Sphere and NUW that will have this technology housed under purpose-built PC3 containment to enable this type of research across all of these recently established strategic partners.

Secondly, it provides linkages of this strategic strength to other strategic pillars (proteomics and genomics) and significantly enhances outcomes using a combination of cutting edge technology (this application) housed in a purpose-built PC3 contained facility.

The requested cell sorter will be the only PC3 contained cell sorter on the UNSW campus, and one of only 5 in Australia (2 in Sydney and 3 in Melbourne – the second PC3-contained cell

sorter in Sydney is dedicated to TB research at the University of Sydney).

5 RESEARCH PROGRAMS/ GROUPS SUPPORTED

Provide a short description of the major research programs/ groups which will be supported by the equipment/ infrastructure, focusing on the significance and innovative nature of the research (max 1 page). For Network Labs (and other projects when applicable), provide a list of additional researchers or groups whose research will benefit.

There are multiple investigators from within the Faculty of Medicine and external to the faculty and UNSW who will utilise the new cell sorter. The new cell sorter will also be accessible to other investigators via the Mark Wainwright Analytical Centre.

The Kirby Institute:

Professor Anthony Kelleher, A/Professor Stuart Turville, Dr Mee Ling Munier, Dr John Zaunders, Dr Chantelle Ahlenstiel and Dr Yin Xu from the Immunovirology and Pathogenesis Program are funded via an NHMRC Program, 2 NHMRC Development grants, 2 NHMRC Project grants, and a European Union Collaborative Research grant. The ability to sort cells from infectious material is essential for maintaining productive collaborations with investigators in Melbourne (Caruso, Kent, Lewin (Melbourne University and Doherty Institute), Pellegrini (WEHI); Perth (French), Canberra (Rao, Ranasinghe), Paris (Autran, Seddiki, Appay) and Oxford (Klenerman, Frater, Phetshouphanh). The group's research involves the pathogenesis of HIV infection with a view to vaccine development (EAVI consortium H2020), immunopathogenesis and manipulation of the HIV reservoir, solving delivery of gene therapy for control of HIV infection (see industry partners below), resolving HIV transmission, HIV cure and immune mediated control, efficacy of novel therapies of HIV infection, basic immunological studies of virus-specific CD4 and CD8 T cells and studies of adoptive immunotherapy for treatment of infection or malignancy with CAR T cells (with David Gottlieb).

Dr Mark Polizzotto from the Therapeutic and Vaccine Research Program is investigating host directed and immune checkpoint inhibitors for cancers in HIV infected populations in Phase ½ trials and has a suite of correlative research studies. These studies are Investigator initiated collaborations with industry and are also run through the NIH sponsored AIDS Malignancy Consortium of which the Kirby is the only node outside the USA and Africa.

School of Medical Sciences:

Professor Andrew Lloyd (Kirby), A/Professor Fabio Luciani, A/Professor Nicodemus Tedla, Dr Rowena Bull, Dr Chaturaka Rodrigo are funded via an NHMRC Program, 3 Project grants, 1 Partnership Project, and 1 Centre for Research Excellence. Their research is examining the immunopathogenesis of Hepatitis C infection, including in vitro studies with genetically modified Hepatitis C constructs and proteins expressed on retroviral backbones.

A/Professor Till Boecking from the Single Molecule Science group is supported by 2 NHMRC grants. His research focuses on elucidating the molecular arms race between HIV and host cell, in particular discovery and characterisation of novel HIV dependency factors and restriction factors that act via the viral capsid. Techniques include cell sorting of activated and resting T cell populations for proteomics and infection assays and advanced single-molecule microscopy.

NeuRA

Dr Lucette Cysique is the NeuroHIV group leader at NeuRA and an NHMRC CDF extended by UNSW Medicine till Dec 2018. Dr Cysique's research focuses on better understanding the pathogenesis of HIV-associated neurocognitive disorders and what role peripheral reservoirs have in persistence of HIV-related brain injury. Cell sorting for characterisation of peripheral reservoirs that are relevant to HIV-related brain injury is paramount for the validity of the project.

Clinical Campus:

Professor Bill Rawlinson, Professor Maria Craig, Dr Ki Wook Kim, Dr Sacha Stelzer-Braid, Dr Wendy van Zuylen and Dr Stuart Hamilton are from the Virology Research Laboratory at Prince of Wales Hospital Randwick. Their work involves studies of viral pathogenesis of congenital

infections, enterovirus, new antivirals, and antiviral resistance. They will utilise the new cell sorter in assessing various infected cell types and sorting based upon cell surface markers.

Dr Kazuo Suzuki from St Vincent's Centre for Applied Medical Research, St Vincent's Hospital is developing gene therapy for HIV with Kelleher's group as well as developing new assays for characterising the activity of the viral reservoir and requires sorting of CD4+ T cells and other subpopulations to work up and validate these assays.

Garvan Institute of Medical Research:

Professor Chris Goodnow is working on single cell transcriptomics of B and T cells in autoimmunity, and has an active collaboration with Kelleher using the Ox40 assay and is looking to extending this by exploring responses to virally driven antigen-specific responses.

Dr Tri Phan is investigating where and how memory B cells are reactivated to make protective antibodies in human volunteers undergoing hepatitis B vaccination. This requires fine needle aspirate biopsies from lymph nodes of volunteers and index cells sorting of single cells into 384-well plates with high precision for single cell RNA sequencing. These powerful studies will enable discovery of cellular and molecular switches that control memory B cell reactivation and their translation into innovative vaccine designs.

Industry:

Dr John Wilkinson from Biotron Australia, works on small molecule inhibitors of HIV/Hepatitis C. Cell sorting and phenotyping of cells from virally infected individuals is paramount to their antiviral program and supports both the ongoing research and clinical programs.

Dr Geoff Symonds, Calimmune/CSL Australia works on gene therapy for HIV in close collaboration with Kelleher and Ahlenstiel and is supporting 2 gene therapy patents.

BRIL, MWAC:

Dr Carl Power is head of the Biological Resources Imaging Laboratory (BRIL) and the BRIL Flow Cytometry Facility and acting Director of the Mark Wainwright Analytical Centre (MWAC). MWAC supports this proposal, as it provides key infrastructure not available at UNSW. The capability to sort PC3 materials safely is unique to this facility and UNSW, the infrastructure request complements the capabilities of the centrally managed UNSW flow cytometry facility.

6 OPERATIONAL PLAN AND COSTS

Please provide a short description (max 1 page) of the operational plan for the infrastructure, including the expected ongoing operational costs associated with the project and how these will be met. Outline proposed access mechanisms where applicable. Network Labs are asked for more detail on meeting operational costs in the next section.

The operational plan for this infrastructure is to have 2 – 3 trained operators who are currently employed by UNSW to assist with cell sorting. If users are planning to require long-term cell sorting for their research these users will be trained to be independent operators and will have access to the UNSW PC3 Containment Lab.

Researchers not named on this application will be able to gain access to the infrastructure via contact with the UNSW BRIL flow cytometry facility, MWAC.

The expected ongoing costs for the new cell sorter include:

- sterile saline for sheath: 50 cartons @ \$17 each = \$850 per annum
- cytometer tracking and setup (CS&T) beads: 2 @ \$200 per bottle = \$400 per annum
- Accudrop setup beads: 6 @ \$210 per bottle = \$1260 per annum
- the service & maintenance contract is \$33 000 per annum, excluding gst (applicable after the expiry of the 12 months warranty, however an extended 24 month warranty will be negotiated if

funding is successful)

We will request that the service and maintenance contract be bundled with the current BRIL flow cytometry service contracts in order to gain a further discount, this is the current situation for the 12-year old FACSria.

The ongoing costs will be covered partially by users, as all users will be charged at the current or negotiated rate that BRIL, MWAC charge for cell sorting services. Additionally funds will be available from grants and the Kirby Institute to cover the balance.

7 COST RECOVERY MECHANISM FOR NETWORK LABS

For Network Labs only, provide a short description (max ½ page) of a proposed cost recovery mechanism that will be implemented to recover operational costs. Consider for example hourly rates for instrument usage or annual subscription fees or a cost-sharing arrangement to recover costs of materials, service and maintenance, consumables etc. Please note that this is indicative only; the Office of the Pro-Vice-Chancellor (Research Infrastructure) and the Mark Wainwright Analytical Centre will assist successful applicants in the set-up of an appropriate cost recovery mechanism.

8 BUDGET SUMMARY

For proposals involving equipment:

- At least **three quotes must be attached** to the application for each item over AUD30,000 (incl. GST), and one quote for each item under AUD30,000 (incl. GST). If fewer quotes are provided, this must be justified in Section 9 Budget Justification. Quotes are not required for items under AUD3,000 (incl. GST).
- When requesting quotes from suppliers, please use the “Request for Quotes” template available at <https://research.unsw.edu.au/unsw-research-infrastructure-scheme>.
- For complex quotes, please provide a one page quote summary or clearly identify the relevant items (e.g. by highlighting).
- For successful applications, Strategic Procurement will be providing advice and support.

For proposals involving staff, please use the salary calculator provided by the Grants Management Office for budget calculations: https://research.unsw.edu.au/document/salary_scales_for_grant_budgeting.xlsx.

If additional funding is being committed from other sources this must be clearly specified.

For Network Lab proposals, a 25% cash contribution from the host School(s) / Faculty towards the total cost of the project is required.

For all two-year projects, including Network Labs, clearly identify the split of funds over two years.

ITEM DETAILS / STAFF	\$ COST	\$ REQUESTED CENTRALLY (ex GST)	\$ SCHOOL/ FACULTY APPROVED CONTRIBUTION (if applicable)	CONTRIBUTING SCHOOL(S)/ FACULTY(IES) (if applicable)
List equipment or other infrastructure purchase costs, specialist fit-out or set-up costs, IT infrastructure and staff costs				

<i>(add rows if needed)</i>			(ex GST)	
2018				
4-laser, 16-colour cell sorter with class II biosafety cabinet		\$495, 000		
2018 TOTAL		\$495, 000		
2019				
2019 TOTAL				
TOTAL				

8.1 Appropriate on-going space is currently available to house/operate this equipment/ infrastructure/ staff (refer to Site Checklist provided)? Yes No

8.2 The installation requirements (refer to Site Checklist provided) of the equipment to be purchased have been taken into account in the above budget estimates?
Yes No

8.3 Will there be a need for refurbishments? Yes No

If Yes, will these refurbishment costs will be covered: (i) School/Faculty OR (ii) a separate budget submission has been made via the Stay in Business Capital Funding (coordinated annually by Facilities Management) .

Please specify:

8.4 The OHS, Risk Assessment and Compliance requirements for the design, manufacture, importation, supply, installation/ erection, commissioning, use, alteration, dismantling, storage and disposal of the equipment have been taken into account? Yes No

8.5 The on-going maintenance and technical staff requirements have been considered and will be covered by the School/Faculty budget? Yes No

8.6 Has funding been sought from other sources for this or a closely related project?

- ARC LIEF Grant Yes No
- Other External Research Grant Yes No
- Operating budget Yes No
- Strategic Priorities Funds Yes No
- 2025 Strategy Business Case Yes No
- Other sources Yes No

Please specify:

8.7 Is this application eligible for consideration under the “NHMRC Equipment Grants funding” criteria outlined in the funding guidelines (Section 4.1b)? Yes No

9 BUDGET JUSTIFICATION

Briefly (max 1 page) provide a justification and priority for each budget item requested. Costings for major ICT/ plant/ equipment where only one quote is provided need to be fully justified. If any item is to be jointly owned, or installed "off-site", this must be clearly specified and justified. For any staff support requested, justify the level of appointment.

Globally there are only two companies that are able to manufacture and supply this requested equipment; hence we have only provided two quotes, one from Beckman Coulter and one from Becton Dickinson.

The amount we are requesting is to cover the cost of the lowest priced instrument (as per quote) which is \$495 000. This amount covers only the base system, however even though the quote includes the additional line items of the Temperature Control Option (\$15000) and Air Compressor (\$9900) if we are successful we would look to find funds internally or find equipment elsewhere (in kind contribution to purchase the Temperature Control Option and Air Compressor).

Site installation checklist

Project Title:	Cell Sorter with Class II Biosafety Cabinet	
Proposed location: Building/ floor/ room #	PC3 FACS laboratory: Wallace Wurth Building / level 5 / room 541A	
Is location approved by the School/ Faculty?	Yes	
Is operational budget required/ approved by the School/ Faculty?	An operational budget is required and has been detailed in the application. Users of the equipment will be charged a users fee which will partially cover the operational budget, the school (Kirby institute) has agreed to cover the balance of the budget.	
Is the space fit-out budget approved or is it dependent on a future allocation (e.g. Capex SIB or equivalent)?	The space fit-out budget has been approved, it is an estimate to cover the hard-wiring of the class II biosafety cabinet.	
Specialist laboratory or site – specify type	The equipment will be placed into a purpose-built module of the current UNSW PC3 facility, room 541A of the Wallace Wurth building.	<i>Subject to approval by any of the following (select all that apply):</i> <input type="checkbox"/> Radiation Safety Committee <input type="checkbox"/> Animal Care and Ethics Committee <input type="checkbox"/> Gene Technology Research Committee <input type="checkbox"/> Other compliance (specify):
A site installation guide has been obtained from equipment suppliers?	Yes, please see attached copy	
Services review carried out by:	Lab Manager / Research Fellow	

Specific Requirements:

Accommodation/ space/ lab needs				
Service Category	Service	Service needed Y / N	Service available at site Y / N	Comments
Workplace	Staff to be accommodated, including number, FTE and level of each.	N		
Learning Environment	Students to be accommodated	N		
	Style of space; standard, PALS, student lead/other	N		
	Size and style of lectern & system interface requirements	N		
Whiteboards	Number/size/style	N		
Others (specify)		N		
Furniture/ Equipment	New/ existing or a combination?	N		
	If existing, is relocation and installation required?	N		
Security requirements	Card reader access control	N		
	Security cameras – note reason	N		

AV (audiovisual) requirements	Type and number of screens/ speakers	N		
	Content development proposal	N		
	Content management proposal	N		
	Other AV	N		
Power requirements	3 phase power	N		
	15 amp power	Y	Y	<i>One required</i>
	Additional power capacity/ circuits	Y	N	<i>One required</i>
	Other special power (specify)	N		
	Back-up generator power	N		
	UPS or power conditioning	N		
IT requirements	IT cabling/ new ports	Y	Y	
	High speed connectivity requirement	Y	Y	
	Data storage required	Y	Y	
	Equipment integration required	N		
	Data security requirements	N		
	Other IT infrastructure (specify)	N		
Heating/ Cooling	Equipment cooling water	N		
	Chiller/ heat exchanger	N		
	Close control of air conditioning (temp/ humidity/ pressure)	N		
	Air conditioning to deal with increased changed heat load	N		
	Cryogen supply	N		
Specialty gases, note type/s	Helium recovery	N		
	Gas reticulation/ specialist gases including Liquid nitrogen with or without phase separator	N		
	Gas dryers or other conditioning	N		
Environmental control	Ventilation extraction/ other specialist exhaust system	N		
	O2 depletion alarm	N		
	Other gas alarms	N		
	HEPA filtered air / other clean-room	N		
	PC2/ Clean room/ Biosafety/ Quarantine or related	Y	Y	
	Fume cupboard	N		
	Safety interlocks (e.g. laser lab)	N		

	Acoustic treatment needed	N		
	Hazardous waste	Y		<i>Waste will be treated in accordance to the UNSW PC3 Facility Guidelines</i>
Specialist Fire Services Requirements	Gas Suppression or VESDA (Very Early Smoke Detection Apparatus)	N		
Floor infrastructure	Heavy equipment – advise total weight & issues	N		
	Anti-vibration requirements or table / other large infrastructure	N		
General	Other specialist water supply	N		
	Sink and/or handwash	N		
	Safety shower and/or eyewash	N		
	Compressed air	N		
	Cardax reader, back to base alarm, other security or access control	N		
Other	Specify other WHS measures	N		
	Life Safety System for hazardous substances	N		
	Additional fire hazards	N		
	Other special services?	N		
Site compatibility issues check				
Site requirement / issue	Service needed Y / N	Service available at site Y / N	Comments	
Equipment causes vibration, or electrical or magnetic interference	N			
Equipment is vibration sensitive, or sensitive to electromagnetic interference	N			
Space accreditation required: PC Lab/Clean Room/Animal Facility/Laser Facility	Y	Y	PC3	
Specialist finishes	N			
Other – specify	N			
Specialist delivery costs & services not included in purchase contract				
Delivery and access	Service needed Y / N	Service available at site Y / N	Comments	
Crane, specialist removals/delivery contractor, scaffolding, special access, other	N			
Decant/ temporary relocation required to enable refurbishment or installation to proceed	No			

Delivery access has been confirmed	Yes
Services works /additions costed by	<i>Estimate from lab manager based on previous work, quote from electrician although requested was not received</i>
Any other comments	None
Installation budget or estimate	\$ 6000

#Contacts for Advice and Assistance

- **School / Faculty advice**

Where significant re-allocation or re-configuration of existing space, or Faculty-level financial and/or strategic support for refurbishment is required for a major project, please consult your Head of School/Centre and the General Manager or Infrastructure Manager for your Faculty.

Where new space allocation is involved, you will *also* require University-level approval.

- **Office of the Pro Vice-Chancellor (Research Infrastructure)**

Grainne Moran (PVC Research Infrastructure); Luc Betbeder-Matibet (Research Computing);
 Julia Muenchhoff (Project Officer)
 Phone: 02 9385 5600
 Email: pvcresin@unsw.edu.au

- **Strategic Procurement**

- **Research and major equipment:**

Thomas Valin (Procurement Manager – Research and Major Equipment, Strategic Procurement/Finance)
 Phone: 02 9385 2645
 Email: t.valin@unsw.edu.au

- **IT related hardware/ software:**

Adele-Rae McAneney (Procurement Manager – IT Procurement, Strategic Procurement/Finance)
 Phone: 0419 167 484
 Email: a.mcaneney@unsw.edu.au

- **For general enquiries, please contact the Finance help desk:**

<https://www.fin.unsw.edu.au/contact-help>

- **RECS – Research Ethics and Compliance**

See <https://research.unsw.edu.au/recs> for contacts for advice on specific areas of compliance

- **Space Allocation**

For confirmation of all space allocation for projects and space advice, contact Jason Coombs, Director of Strategic Initiatives and Space Management, 9385 3781, j.coombs@unsw.edu.au

- **Facilities Management**

For local building services advice, contact your Faculty CFM

For capital works, contact Anne Warren, Manager, Capital Program, FM, 9385 3946, anne.warren@unsw.edu.au

For services infrastructure works, contact Greg Kaplan, Associate Director, Asset Management, FM, 9385 3831, greg.kaplan@unsw.edu.au

- **Workplace Health and Safety**

Contact your Faculty's Health Safety Environment Coordinator in the first instance, <https://safety.unsw.edu.au/contacts>

REQUEST FOR QUOTATION (RFQ)



1. RFQ DETAILS

Details for this RFQ are:

Quotation requested for	BD FACSAria Fusion 4 laser, 16-colour Cell Sorter with ACDU.
UNSW Contact Person	Dr C. Mee Ling Munier
Closing Date	Monday 4 th September

2. CONDITIONS OF QUOTATION

2.1 Purpose

This RFQ seeks quotations from suppliers. Please note the UNSW Purchase Order Terms and Conditions, which apply to potential future purchases are contained within the Purchase Agreement attached to this this RFQ. In absence of attachments, the UNSW Terms and Conditions will apply:

https://www.fin.unsw.edu.au/sites/default/files/content/tc_purchase.pdf.

2.2 Quotation Accuracy

Before submitting a quotation, suppliers must:

- (a) examine all information relevant to the risks and contingencies and other circumstances having an effect on the quotation; and
- (b) satisfy themselves:
 - (i) that the price is correct; and
 - (ii) that it is financially and practically viable for them to enter into and perform the contract.

2.3 Quotation Lodgement

Quotations (including all supporting information, if any) must be fully received by the Closing Date. Suppliers should notify the UNSW Contact Person in writing on or before the Closing Date and Time if they find any discrepancy, error or omission in this RFQ.

Suppliers are asked to complete Part 4 of this RFQ document. Prices, responses and other information provided in the quotation must be in writing and in English.

2.4 Corruption or Unethical Conduct

Suppliers must comply with the requirements of the UNSW Code of Conduct which is available at <https://www.gs.unsw.edu.au/policy/documents/codeofconduct.pdf> and must disclose any conflicts of interests in their quotation.

2.5 Quotation Validity

It is not intended by UNSW or the supplier that an issue of a RFQ or a response to it commits, obligates or otherwise creates a legal relationship in respect to entering into a contract with that party. However, any quotation lodged with UNSW will constitute an irrevocable offer by the supplier, which remains open and capable of acceptance until **twelve months** from the RFQ closing date.

2.6 Acceptance of a Quotation

UNSW is not bound to accept the lowest or any quotation. UNSW shall not be in any circumstances responsible for any costs incurred by a respondent in preparing and submitting a quotation. Acceptance of a quotation or part of a quotation will be subject to the UNSW and the successful supplier to enter into a written agreement and/or the placement of a Purchase Order.

2.7 Disclosure Information

Following UNSW's decision, all suppliers will be notified of the outcome of their submitted quotations. Details of this quotation and the outcome of the quotation process may be disclosed in accordance with the *Government Information (Public Access) Act (NSW)*.

2.8 UNSW contact person

All communications must be issued to the UNSW contact person defined in part 1 RFQ details.

3. REQUIREMENTS (to be completed by UNSW)

Functional requirements	BD FACSAria Fusion 4 laser, 16-colour Cell Sorter w ithACDU. For multi-colour cell sorting of infectious or genetically modified organisms in a contained biosafety class II cabinet.
Description of goods and/or services	<p>Laser Configuration:</p> <ul style="list-style-type: none"> • 405nm: 85mW 6 PMTs • 488nm: 50mW 2 PMTs • 640nm: 100mW 3 PMTs • 561nm: 50mW 5 PMTs <p>Inclusions:</p> <ul style="list-style-type: none"> • Baker Class II Type A2 Biosafety Cabinet • HP Workstation and Ergonomic Stand • Automated Cell Deposition Unit (ACDU), for plate sorting • Delivery and Installation • 12 months warranty <p>Discount for trade-in of 3-laser 12-colour BD FACSAria IIu</p>
Delivery address	PC3 Laboratory, Immunovirology and Pathogenesis Program, The Kirby Institute, Level 5 Wallace Wurth Building, UNSW Sydney

Delivery terms (Incoterms 2010)	Quotation must include DDP (Delivery Duty Paid) or DAP (Delivered At Place) to the specified delivery address.
Installation, commissioning and acceptance testing	The quotation must include installation, commissioning and acceptance testing. Please list the acceptance testing your organisation will provide.
Warranty period	12 months warranty (comprehensive service maintenance agreement to be offered post warranty period).

4. SUPPLIER'S RESPONSE (to be completed by supplier)

4.1 Supplier's Information (to be completed only if it is the first time the supplier is dealing with UNSW and does not have a vendor account already created in UNSW's system)

If a Company, the Registered Company Name	
If a Partnership, the Partnership Name	
If an Individual, the Individual's Full Name	
Trading Name	
Australian Business Number (ABN) or Country Equivalent (e.g. Business Registration Number)	
Australian Company Number (ACN) or Country Equivalent (e.g. Business Registration Number)	
Registered Office (if a company)	
Site Address (principal place of business)	
Postal Address (principal place of business)	
Main Switchboard Telephone Number	
Company Email Address	
Main Point of Contact	Name: Position: Phone: Email:
Bank details	
Insurance Details:	<i>Please attach copies of the certificates of currency for those insurances listed below.</i>
Public and Product Liability Insurance Cover	Value/ Expiry...../.....
Professional Liability Insurance Cover	Value/ Expiry...../.....
Workers Compensation Insurance	

4.2 Supplier's offer to meet the requirements outlined in Part 3

Please provide a **fixed price quotation** in \$AU or in foreign currency with itemised costs for goods and/or services, delivery, installation, commissioning and acceptance testing.

Please also include:

- a list of installation site requirements (power, specialty gases, vibration limits, etc.), if applicable (e.g. in the case of scientific instrumentation);
- training offered on the goods and/or services covering safe operation, if applicable (e.g. in the case of scientific instrumentation);
- operating, maintenance and any other manuals required to operate the goods and/or services;
- acceptance tests which need to be successfully completed in the presence of UNSW technical staff in order for UNSW to accept the goods and/or services;
- a timeline detailing expected shipping, delivery, installation and training dates; fully inclusive warranty (including parts, labour and any applicable shipping and travel costs); and
- any offer of extended warranty or service.

Guide Note: Not all columns might apply to your RFQ, please delete columns from the table as required.

Description (add rows if required)	Qty	Cost (excl. GST)	Delivery lead-time
BD FACSAria™ Fusion 4 laser, 16-colour Cell Sorter with ACDU Laser Configuration: <ul style="list-style-type: none"> • 405 nm: 85 mW 6 PMTs • 488 nm: 50 mW 2 PMTs • 640 nm: 100 mW 3 PMTs • 561nm: 50mW 5 PMTs Inclusions: <ul style="list-style-type: none"> • Baker Class II Type A2 Biosafety Cabinet • HP z240 Workstation and Ergonomic Stand • Automated Cell Deposition Unit (ACDU), for Plate Sorting • Delivery and Installation • 12 months warranty A trade in for the existing 3-laser 12-colour BD FACSAria Ilu will be considered as part of this offer. <i>Quote Reference: FY17143</i>	1	\$495,000	12 weeks from the receipt of a purchase order.

Installation site requirements

A site inspection at the laboratory will be conducted by a BD Field Service Engineer. If the optional Air Compressor is not present, the BD FACSAria Fusion requires a source of air (80-90 psi, regulated, filtered <5 ppm, dry, oil free).

Please see attached document - *BD FACSAria Fusion Cell Sorter Site Preparation Guide*.

Timeline for delivery, installation and training

Delivery, lifting or moving the instrument to facilitate installation will be the responsibility of BD. The equipment will be supplied, installed and acceptance tested in a period of less than 12 weeks (excluding public holidays) from the date of the purchase order.

The BD FACS Aria Fusion will be deemed to be accepted following the installation service report being signed by the end user/customer. The service report indicates that the instrument has been installed according to the manufacturer's specifications.

A comprehensive 3-5 day training program accommodating up to two (2) persons will be held on site. Training will commence soon after instrument installation at a mutually convenient time. The training is tailored to identify the laboratory's applications and needs. Applications support will be provided as necessary. Comprehensive training manuals are included for the laboratory as a reference and to facilitate on-going training for future operators.

Warranty or Service

There is a 12 month warranty included in the purchase of this instrument.

A Comprehensive Service Maintenance Agreement will be offered at the conclusion of the warranty period. The current list price of a contract is \$33,000 GST exclusive. Comprehensive Service Maintenance Agreements cover all parts and labour and include the following:

- Preventative maintenance visits – 2 scheduled per annum.
- Remedial maintenance visits (Breakdown) as required.
- All engineering parts including fluid and air filters but no other consumables.
- Engineering costs including labour and travel.
- 24/7 phone support by an 'on-call' BD service engineer.
- After hours engineer attendance on-site at the normal hourly rate of \$280 GST exclusive (please note: where warranty or a Comprehensive Service Maintenance Agreement does not exist, the after-hours rate is \$380 GST Exclusive per hour).
- Modifications recommended by the manufacturer.

Service provided for each visit and including the scheduled 6-monthly preventative maintenance visit will be detailed in a service report signed by the BD Field Service Engineer.

At the end of the warranty period, any service contract for the Baker Hood will need to be discussed with the local Baker representative in Australia.

Upgrade of Microsoft Windows® Operating Systems is not included as part of the BD Comprehensive Service Maintenance Agreement. The Baker Hood is not included as part of the BD Comprehensive Service Maintenance Agreement.



BD



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Research Park
North Ryde NSW 2113
t: +612 8875 7000
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24 August 2017

Dr Mee Ling Munier
Research Fellow
The Kirby Institute, University of New South Wales

69 Brandl Street
Eight Mile Plains
Brisbane QLD 4113
t: +617 3347 4700
f: +617 3347 4747

Reference: FY17143

Dear Mee Ling,

Thank you for the opportunity to provide the following proposal for the supply and installation of the BD FACS Aria™ Fusion Cell Sorter to the Kirby Institute.

20 Dalmore Drive
Scoresby VIC 3179
t: +612 8875 7000
f: +613 9764 2021

The BD FACS Aria Fusion cell sorter improves on the solid foundation of patented technologies, exceptional multicolour performance and ease-of-use that was first brought to the world of sorting by the launch of the BD FACS Aria™ cell sorter. This sorting know-how is combined with best-in-class biosafety expertise to create a fully integrated advanced cell sorter and biosafety solution for research laboratories.

14B George
Bourke Drive
Mt Wellington
Auckland NZ 1060
t: +649 574 2468
f: +649 574 2469

The custom-tailored biosafety cabinet for the BD FACS Aria Fusion was designed in collaboration with The Baker Company, a leader in biosafety solutions. The BD FACS Aria Fusion cell sorter is also available without a biosafety cabinet, which can be installed at a later date as a field upgrade.

42B Salvado Road
Wembley WA 6014
t: +618 9388 4003
f: +618 9388 7632

To achieve unrivalled sensitivity and resolution, the BD FACS Aria Fusion has precisely integrated fluidic and optical systems to maximise signal detection. Optimised fibre-launched lasers improve sensitivity and resolution for each colour in a multicolour assay. Innovations such as the patented flow cell with gel-coupled cuvette ensure performance, safety and ease-of-use.

22 Greenhill Road
Wayville SA 5034
t: +618 8372 7814
f: +618 8372 7813

The BD FACS Aria Fusion is covered by a 12 warranty, after which a fully Comprehensive Service Maintenance Agreement (full parts and labour including lasers) is available for your consideration.

bd.com

This quotation is **commercial in confidence** and valid until 31 December 2017. All prices quoted are exclusive of GST. Unless otherwise specified, BD standard terms and conditions apply. If you have any further questions, please do not hesitate in contacting either myself on 0436 043 636 or Marlene Daalmeyer on 0408 428 052.

Yours sincerely

Hayley Suen
Applications Specialist
BD Life Sciences

BD FACSAria Fusion Instrument Description	Price (GST Excl.)
<p>BD FACSAria™ Fusion 4 laser, 16-colour Cell Sorter with ACDU</p> <p>Laser Configuration:</p> <ul style="list-style-type: none"> • 405 nm: 85 mW 6 PMTs • 488 nm: 50 mW 2 PMTs • 640 nm: 100 mW 3 PMTs • 561nm: 50mW 5 PMTs <p>Inclusions:</p> <ul style="list-style-type: none"> • Baker Class II Type A2 Biosafety Cabinet • HP z240 Workstation and Ergonomic Stand • Automated Cell Deposition Unit (ACDU), for Plate Sorting • Delivery and Installation • 12 months warranty <p>BD Comprehensive Service Maintenance Agreement will be offered at the conclusion of the warranty period</p>	<p>\$495,000</p>
Instrument Options	Price (GST Excl.)
<p>643752 Temperature Control Option</p> <p>Temperature regulation during a sort for both sort tubes and plates. Includes recirculating water bath and specially designed collection tube holders: 2-way 15 mL, 4-way 12 x 75 mm, 4-way 1.5 mL Eppendorf.</p>	<p>\$15,000</p>
<p>660362 Air Compressor</p> <p>Specifications:</p> <ul style="list-style-type: none"> • 230V/50Hz • 0-120 Psi • 4L 	<p>\$9,900</p>

BD FACSAria Fusion HP z240 Workstation SSF*

Operating System:	Microsoft Windows 7 Professional Edition 32-bit OS US
Processor:	Intel Xeon E3- 1240v5 3.5 GHz (up to 3.9 GHz) 8MB
RAM:	8GB DDR4- 2133 ECC (2x4GB) Unbuffered RAM
Video card:	AMD FirePro W2100 2GB 2xDP
Image Acquisition:	Coreco Dual X64-AN Quad Frame Grabber Card
1st Hard drive:	HP 500GB SATA 7200 1st HDD (1st slot)
2nd Hard drive:	HP 1TB 7200 RPM SATA 2nd HDD (2nd slot)
DVD drive:	9.5mm Slim SuperMulti DVDRW 1st ODD
1st Ethernet Card:	Integrated Gigabit (10/100/1000) Ethernet
2nd Ethernet Card:	Intel Ethernet I210-T1 PCIe NIC
Monitors:	22" LCD flat panel
Acquisition Software:	BD FACSDiva™ 8.0.1.

The HP z240 Workstation may at BD's discretion be supplied in a configuration differing from that described above. BD guarantees the above configuration shall be the minimum required specification and the items supplied will, in the sole opinion of BD, either meet or exceed this specification. Only those items, which have been tested and verified by Becton Dickinson Immunocytometry Systems (BDIS), will be included with the HP z240 Workstation.

Delivery and Installation

A site inspection at the laboratory will be conducted by a BD Field Service Engineer. If the optional Air Compressor is not present, the BD FACSAria Fusion requires a source of air (80-90 psi, regulated, filtered <5 ppm, dry, oil free).

Delivery, lifting or moving the instrument to facilitate installation will be the responsibility of BD. The equipment will be supplied, installed and acceptance tested in a period of less than 12 weeks (excluding public holidays) from the date of the purchase order.

Operator Training - OPTIONAL

A comprehensive 3-5 day training program accommodating up to two (2) persons will be held on site. Training will commence soon after instrument installation at a mutually convenient time. The training is tailored to identify your laboratory's applications and needs. Applications support will be provided as necessary. Comprehensive training manuals are included for the laboratory as a reference and to facilitate on-going training for future operators.

Engineering Services

BD has a dedicated team of full-time engineers based in NSW, VIC, QLD, WA, SA and NZ. The National Service Manager and a dedicated Parts Engineer are based in NSW. During the warranty period BD-trained service engineers will conduct routine periodic preventative maintenance inspection and procedures. These procedures are performed by appointment at mutually convenient times.

Comprehensive Service Maintenance Agreement

A Comprehensive Service Maintenance Agreement will be offered at the conclusion of the warranty period. Comprehensive Service Maintenance Agreements cover all parts and labour and include the following:

- Preventative maintenance visits – 2 scheduled per annum.
- Remedial maintenance visits (Breakdown) as required.
- All engineering parts including fluid and air filters but no other consumables.
- Engineering costs including labour and travel.
- 24/7 phone support by an 'on-call' BD service engineer.
- After hours engineer attendance on-site at the normal hourly rate of \$280 GST Exclusive (please note: where warranty or a Comprehensive Service Maintenance Agreement does not exist, the after-hours rate is \$380 GST Exclusive per hour).
- Modifications recommended by the manufacturer.

Service provided for each visit and including the scheduled 6-monthly preventative maintenance visit will be detailed in a service report signed by the BD Field Service Engineer.

Upgrade of Microsoft Windows® Operating Systems is not included as part of the BD Comprehensive Service Maintenance Agreement.

BD FACSAria™ Fusion Cell Sorter Site Preparation Guide

For Research Use Only

bdbiosciences.com
23-14818-00
7/2013



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Trademarks

FlexAIR is a registered trademark of The Baker Company.

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Regulatory information

Class 1 Laser Product.

For Research Use Only. Not for use in diagnostic or therapeutic procedures.

FCC information

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTICE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

Shielded cables must be used with this unit to ensure compliance with the Class A FCC limits.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

History

Revision	Date	Change made
23-14818-00	7/2013	Initial release

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Introduction

This chapter covers the following topics:

- [About this guide \(page 6\)](#)
- [Physical characteristics \(page 6\)](#)
- [Equipment moving policy \(page 8\)](#)

About this guide

Introduction This topic describes the purpose of this guide.

Purpose This site preparation guide is for BD Biosciences representatives, customers, and potential customers to assist in the planning of space and utilities required for the BD FACSAria™ Fusion cell sorter system.

Use the *BD FACSAria Fusion Site Preparation Guide* to obtain information on:

- Dimensions and handling of instruments
 - Preparing the site
-

Physical characteristics

Introduction This topic describes the physical dimensions and weights of the shipping crates for the BD FACSAria Fusion cell sorter and the biological safety cabinet (BSC) option.

Dimensions and weight

Item	Dimensions (H x W x D)	Weight
Cytometer (crated, 1 crate)	170 x 152 x 122 cm (67 x 60 x 48 in.)	664 kg (1,463 lb)
Cytometer (uncrated)	142 x 128 x 87 cm (56 x 50 x 34 in.)	475 kg (1,047 lb)
BSC (crated, 1 crate)	188 x 155 x 117 cm (74 x 61 x 46 in.)	408 kg (900 lb)
BSC (uncrated)	135 x 127 x 89 cm (53 x 50 x 35 in.)	290 kg (640 lb)

BD FACSria Fusion system (without BSC) operating characteristics

Item	Measurement
Heat dissipation (measured)	1,965 BTU/hour (maximum, depends on the choice and number of lasers)
Power consumption	576 W (5-laser system)
Instrument noise	<80 dB accumulated noise from all running equipment

BD FACSria Fusion system with BSC operating characteristics

Item	Measurement
Heat dissipation (measured)	4,422 BTU/hour (5-laser system)
Power consumption	1,296 W (maximum)
Instrument noise	<80 dB accumulated noise from all running equipment
Vent to room	484 m ³ /hour (285 CFM)
FlexAIR® canopy exhaust connection (CEC)	730 m ³ /hour (430 CFM) minimum 1,070 m ³ /hour (630 CFM) maximum

BD FACSAria Fusion components and options operating characteristics

Option	Actual power draw (W)	Equivalent heat dissipation (BTU/hour) at 120 VAC
Workstation	180	614
BSC	720	2,457
Aerosol Management Option (AMO) (for systems without the BSC)	660	2,252
Temperature control option	1,380	4,709
Compressor option	996	3,398
Uninterruptible power supply (UPS) option	100	614

Equipment moving policy

Introduction

This topic describes the BD Biosciences policy for lifting and moving the BD FACSAria Fusion cell sorter, optional BSC, and accessories.

General policy

Contact BD Biosciences to arrange installations, relocations, and removal of instruments. Do not move or relocate the instruments. Do not open instruments. Contact BD Biosciences before opening any options for the instrument.

Contact information

To contact your representative:

1. Go to bdbiosciences.com.
2. Click **Contact Us**.

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Site requirements

This chapter covers the following topics:

- [Site preparation \(page 10\)](#)
- [Structural requirements \(page 11\)](#)
- [Environmental requirements \(page 13\)](#)
- [Power requirements \(page 15\)](#)
- [Component dimensions \(page 18\)](#)
- [Space and clearance requirements \(page 20\)](#)

Site preparation

Introduction This topic describes how to get your laboratory space ready for installation of the BD FACSAria Fusion.

Pre-installation Before scheduling an installation appointment, do the following:

- Read this document thoroughly, and use the checklist to ensure that your site meets all the requirements.
- Clean the space where the system will be located.
- If the system will be installed in a BSL-3 laboratory, decontaminate the space.
- Make sure that a forklift (minimum 680-kg (1,500-lb) capacity) is available to lift the system off the shipping pallet.
- If you choose not to use BD movers, then you need to have four movers onsite. The movers will be required to lift the BSC about 91.4 cm (36 in.) above the floor. A BD field service engineer (FSE) must be present during the move.
- Make sure there is enough space to unpack the crates and set up the system. See [Dimensions and weight \(page 6\)](#) and [Required space for the BD FACSAria Fusion \(page 20\)](#).
- If you plan to add a BSC later, be aware of the BSC requirements.
- If you are installing the BSC option, prepare the electrical wiring for hardwiring the BSC at least three days prior to the installation (see [Power inlet \(for BSC\) \(page 15\)](#)).
- If you are installing the BSC option, have an electrician present during the installation.
- If you are using the FlexAIR option, install the FlexAIR to the building exhaust (see [Required space for the BD FACSAria Fusion \(page 20\)](#) for the location of the duct).
- If you are installing the seismic installation option, have the bolt holes drilled in the floor (see [Seismic installation option \(page 11\)](#) for the placement of the holes).

Structural requirements

Introduction This topic describes the specific structural features that must be present at the site. It also provides guidelines for the location of the BD FACSAria Fusion and the BSC.

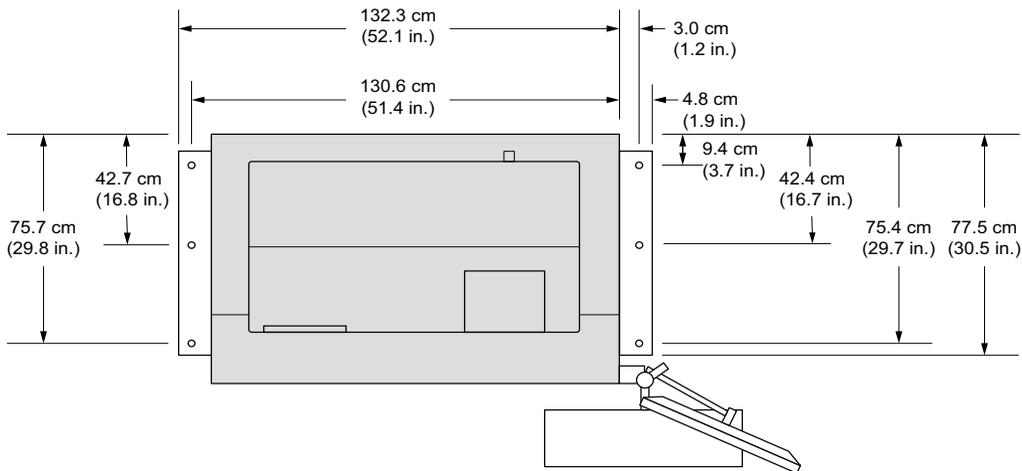
Structure The BD FACSAria Fusion cell sorter system must be unpacked before moving into the laboratory. Doorways to the laboratory must have a minimum width of 91.4 cm (36 in.) to move the unpacked system into the laboratory.

The BSC option requires a minimum 91.4-cm (36-in.) door opening and a minimum ceiling height of 228.6 cm (90 in.) without house exhaust, or 244 cm (96 in.) with the FlexAIR exhaust connection option. If the door cannot open more than 90 degrees, then the door needs to be removed.

Seismic installation option If you are installing the seismic installation option, the holes will need to be drilled in the floor prior to the installation. The seismic installation option includes the anchor bolts and a drill hole template to help you locate where the drill holes should be made. Requirements for the seismic installation option include the following:

- The concrete floor must not be cracked.
- The system must be set a minimum of 15.2 cm (6 in.) away from the wall. Account for this distance when drilling the holes.
- Drill six holes of 1.27-cm (1/2-in.) diameter and a minimum of 10.8-cm (4.25-in.) depth into the floor. Hole depths must exceed the actual anchor embedded depth by at least one diameter.
- Use the provided hardware, Hilti SST wedge anchors (KB3-SS304), with a diameter of 1.27 cm (1/2 in.) and a minimum length of 9.53 cm (3.75 in.) to anchor down the system.

The following image shows the drill hole locations for the seismic installation option.



Location of the BD FACSAria Fusion

For optimum performance of the cell sorter, avoid placing it near:

- Areas that produce dust particles or smoke.
- Areas with heavy-duty mechanical equipment that generates floor vibrations.
- A window or other location where the local temperature is likely to vary noticeably throughout the day.

Location of the BSC

If you are installing a BSC with the cell sorter, or plan to add a BSC in the future, place the system in a corner of the laboratory away from drafts generated by foot traffic, doors, windows, and vents. Published research shows that infectious material can escape the BSC, and room air can enter it, if air currents in the room exceed the intake velocity of the BSC.

More information

- Rake BW. Influence of crossdrafts on the performance of a biological safety cabinet. *Appl Environ Microbiol.* 1978; 36:278-283.

Environmental requirements

Introduction This topic describes site environmental conditions that are necessary for optimal performance of the cytometer and BSC.

BD FACSAria Fusion The following table lists the environmental requirements common to systems with and without the BSC.

Item	Requirements
Lighting	The BD FACSAria Fusion optics and detectors are shielded from room lighting and have no specific requirements.
Floor loading (weight that the floor can support)	128-kg (282-lb) point load (weight per foot) Total weight (without BSC): 475 kg (1,047 lb) Total weight (with BSC): 765 kg (1,687 lb)
Communications	We recommend having a telephone near the instrument to communicate with the BD Customer Support Center regarding system operation. An Ethernet wall jack is recommended for communication between the cytometer, workstation, and your network.
Internet access	Internet access is not required for the computer supplied with the instrument.
Temperature	BD FACSAria Fusion without the BSC: 17.5°C–27.5°C (63.5°F–81.5°F) BD FACSAria Fusion with the BSC: 17.5°C–22.5°C (63.5°F–72.5°F) For systems with the BSC, if the lab temperature cannot be maintained within this range, then the FlexAIR option must be installed. If you have more than one instrument, we recommend that you install the FlexAIR option.

Item	Requirements
Water supply	We recommend having a sink and shelving in the lab.
Air supply	6.6–6.9 Bar (95–100 psi) regulated. The source of the compressed air must deliver clean (<5 ppm) dry-filtered (oil-free) air at stable pressures. The worst case air consumption, based on 100 tubes per hour, is approximately 0.52 m ³ /h (standard cubic meters per hour (SCMH)).
AMO hose (for systems without the BSC)	Maximum length of 3 m (10 feet)
Microscope	We recommend having a microscope in the lab to examine the nozzle tip for clogs or damage, to verify that the nozzle O-ring is installed correctly, and to examine samples.
Sonicator	We recommend having a sonicator in the lab to clean the nozzle.

BD FACS Aria Fusion with the BSC

The following table lists additional environmental requirements for systems with the BSC.

Item	Requirements
FlexAIR connection to building exhaust (option)	A 30.5-cm (12-in.) diameter flanged connection with a 25.4-cm (10-in.) diameter spun baffle is provided. The FlexAIR duct must be hard-mounted to the building exhaust duct prior to the system installation.
House exhaust	5"–15" Hg at 1 CFM
Power inlet (for BSC)	3.8-cm (1.5-in.) flex conduit coupling (either 45 or 90 degrees) <ul style="list-style-type: none"> • North America/Japan: 110/120 VAC, 14 AWG, 3 conductors • International: 230 VAC, 2.5 mm, 3 conductors

Power requirements

Introduction

This topic describes the power requirements necessary for the BD FACS Aria Fusion, BSC, and auxiliary components to operate uninterrupted in any location worldwide.

Dedicated circuits required

A dedicated circuit is one that does not share the electrical source with any other equipment. Operating other equipment on the same electrical circuit may cause intermittent failures, resulting in loss of data or component failures.

The cytometer, workstation, and BSC each require a dedicated circuit. The optional components each need to have an electrical outlet (see [BD FACS Aria Fusion components and options operating characteristics \(page 8\)](#) for more information).

Power requirements

The power outlet requirements for the system are as follows. Power outlet requirements are specified by Underwriters Laboratories (UL) and are based on values for surge protection, age, and worst case analysis.

Component	UL-required input current	Maximum rated power
BD FACSAria Fusion	15 A at 120 V 7.8 A at 230 V	1,800 W
Workstation	5 A at 120 V 2.6 A at 230 V	600 W
BSC	15 A at 100/120 V 13 A at 230 V	1,725 W 2,860 W

Power requirements for options

Option	UL-required input current	Maximum rated power
Aerosol Management Option (AMO) (for systems without the BSC)	10 A at 100/120 VAC 4.3 A at 230 VAC	1,000 W
Temperature control option	15 A at 100/120 VAC 7.8 A at 230 VAC	1,800 W
Compressor option	10 A at 120 VAC 5.2 A at 230 VAC	1,200 W
Uninterruptible power supply (UPS) option	12 A at 100/120VAC 7.5 A at 230 VAC	1,440 W 1,725 W

Regional power requirements

The following table shows the electrical requirements needed for each outlet for different countries.

Note: See the previous tables for detailed power requirements for system components and options.

Country	Voltage (VAC)	Frequency (Hertz)
Australia	230 \pm 10%	50
Canada	115 \pm 10%	60
Europe	220 \pm 10%	50
Japan	100 \pm 10%	50/60
Mexico	115 \pm 10%	60
North America	115 \pm 10%	50/60
South America	110/220 \pm 10%	50/60
United Kingdom	220 \pm 10%	50

BSC electrical wiring

The BSC must be hardwired to the wall. The electrical wiring should be prepared at least three days prior to installation. The electrical junction box must be located within 3 m (10 feet) of the BSC. The junction box must be switchable with a lockout-tagout system and meet regional requirements for safety. You must also arrange for an electrician to be present during the installation to establish the electrical connection for the BSC. Always follow your local and national wiring codes. See [Power inlet \(for BSC\) \(page 15\)](#) for more information.

Component dimensions

Introduction

This topic shows the dimensions for the BD FACSAria Fusion base components and options.

BD FACSAria Fusion base components

The following table provides dimensions for the BD FACSAria Fusion base components.

Component	Height	Width	Depth
Instrument	142.2 cm (56.0 in.)	128 cm (50 in.)	87.1 cm (34.3 in.)
Workstation	46 cm (18 in.)	18 cm (7 in.)	43 cm (17 in.)
19-inch monitor	33.7 cm (13.25 in.)	41 cm (16 in.)	6.4 cm (2.5 in.)

BD FACSria Fusion options The following table provides dimensions for the BD FACSria Fusion options, except the BSC.

Option	Height	Width	Depth
23-inch monitor	31.8 cm (12.5 in.)	54 cm (21.25 in.)	5.7 cm (2.25 in.)
Aerosol Management option (AMO) (for systems without BSC)	54.6 cm (21.5 in.)	45.2 cm (17.8 in.)	38.1 cm (15.0 in.)
Temperature control option	63.2 cm (24.9 in.)	22.0 cm (8.7 in.)	41.4 cm (16.3 in.)
Compressor option	39.4 cm (15.5 in.)	43.8 cm (17.25 in.)	57.2 cm (22.5 in.)
Table option	94.0 cm (37.0 in.)	71.1 cm (28.0 in.)	66.0 cm (26.0 in.)
UPS option	21.6 cm (8.5 in.)	20.8 cm (8.2 in.)	47.0 cm (18.5 in.)

Space and clearance requirements

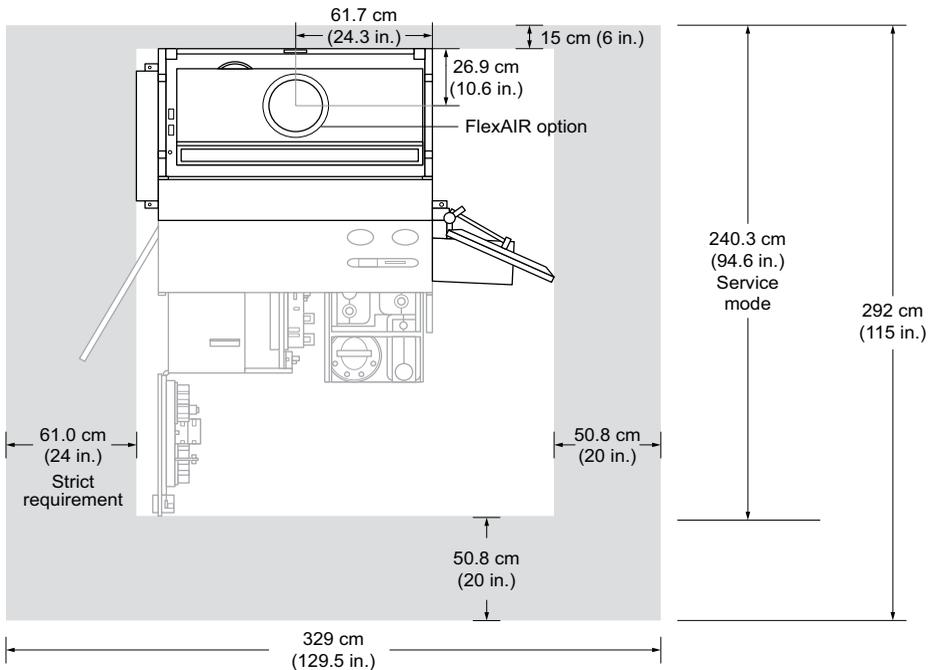
Introduction

This topic describes space and clearance requirements for the BD FACSAria Fusion.

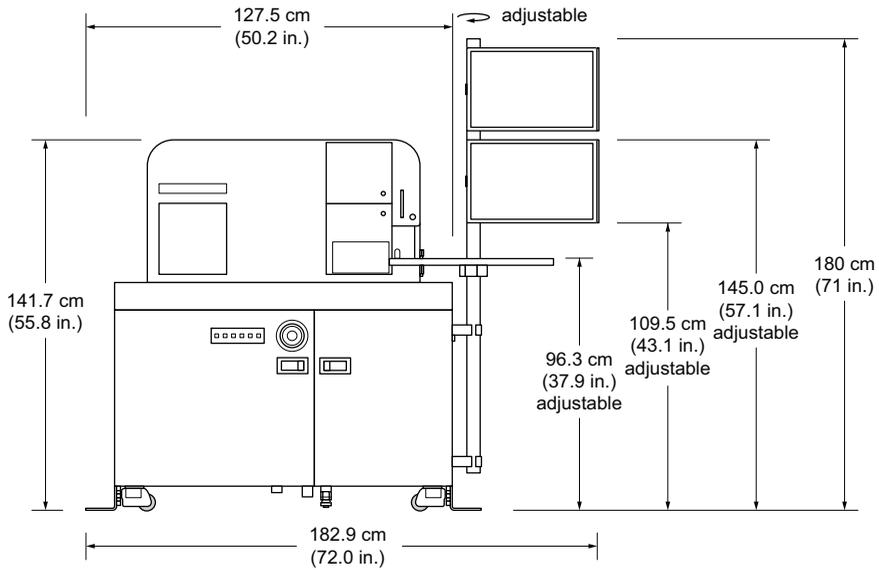
Required space for the BD FACSAria Fusion

The following image shows the top view and indicates the minimum space requirements of the BD FACSAria Fusion with or without a BSC. The shaded area indicates the clearance requirements. The space requirement includes the space needed for service access (service mode). This space is needed to pull out the fluidics drawer, open the optics access door, and provide access for the FSEs to service the system.

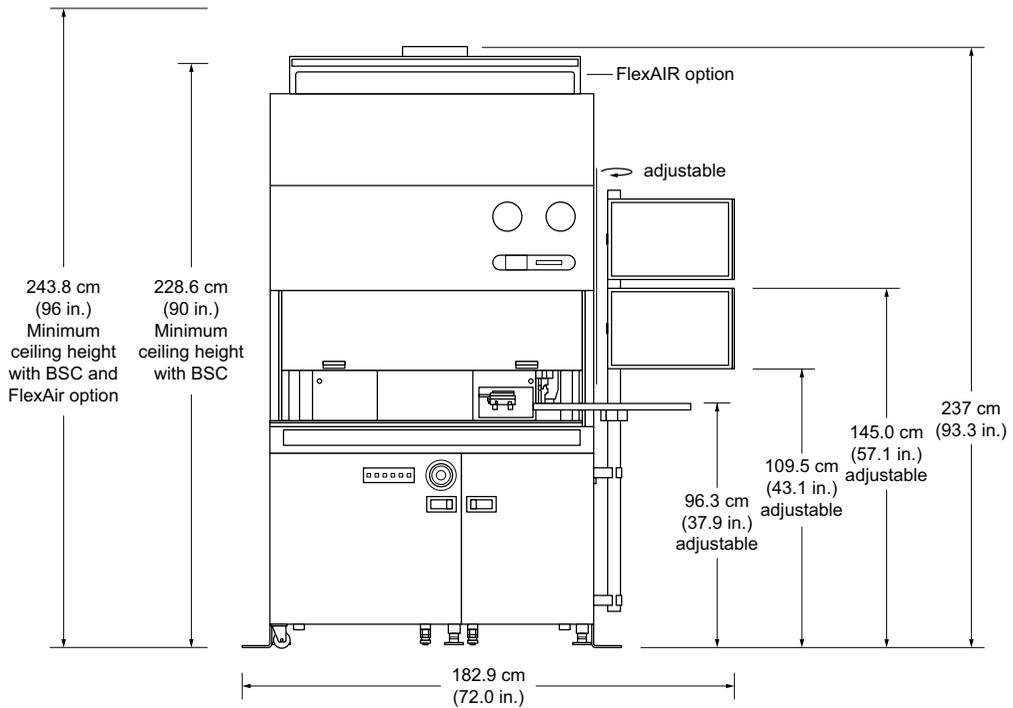
The image also shows the duct location for the FlexAIR option connection.



The following image shows the front view of the BD FACSAria Fusion.



The following image shows the front view of the BD FACSAria Fusion with the BSC and FlexAIR option.



3

Checklist

Use this checklist to confirm that the site meets the necessary requirements.

Checklist items	Acceptable (Y, N, N/A)
Required	
Doorway 91.4 cm (36 in.) wide	
Forklift (minimum 680-kg (1,500-lb) capacity)	
House air	
<p>For systems without BSC: Temperature between 17.5°C (63.5°F) and 27.5°C (81.5°F)</p> <p>BD FACSAria Fusion with BSC: Temperature between 17.5°C and 22.5°C (63.5°F and 72.5°F)</p>	
<p>Power</p> <p>North America: 120 ±10% VAC, 50/60 Hz, 15 A</p> <p>Outside North America: 230 ±10% VAC, 50/60 Hz, 13 A</p> <p>Japan: 100 ±10% VAC, 50/60 Hz, 15 A</p>	
<p>Dedicated circuits (that comply with the power requirements from the preceding row) for each of the following (if present in your system configuration):</p> <ul style="list-style-type: none"> ● Cytometer ● Workstation ● BSC 	

Checklist items	Acceptable (Y, N, N/A)
Floor space for system and workstation with clearance (H x W x D) 179.1 x 329 x 292 cm (70.5 x 129.5 x 115 in.) System with the BSC 228.6 x 329 x 292 cm (90.0 x 129.5 x 115 in.) System with the BSC and FlexAIR option 243.8 x x 329 x 292 cm (96.0 x 129.5 x 115 in.)	
(For the BSC option) Electrical wiring prepared for hardwiring the BSC three days prior to the installation (see Power inlet (for BSC) (page 15))	
(For the BSC option) Electrician onsite at the time of the installation to establish the electrical connection for the BSC	
(For the FlexAIR option) FlexAIR hardmounted to the building exhaust in the correct location (see Space and clearance requirements (page 20))	
(For the seismic installation option) Bolt holes drilled in the floor at the appropriate locations (see Seismic installation option (page 11))	
Optional	
Internet connection of at least 100 Mbps	
Sink and shelving	
Microscope	
Sonicator	

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REQUEST FOR QUOTATION (RFQ)



1. RFQ DETAILS

Details for this RFQ are:

Quotation requested for	Beckman Coulter Cell Sorter
UNSW Contact Person	Dr C. Mee Ling Munier
Closing Date	Wednesday 6 th September

2. CONDITIONS OF QUOTATION

2.1 Purpose

This RFQ seeks quotations from suppliers. Please note the UNSW Purchase Order Terms and Conditions, which apply to potential future purchases are contained within the Purchase Agreement attached to this this RFQ. In absence of attachments, the UNSW Terms and Conditions will apply:

(https://www.fin.unsw.edu.au/sites/default/files/content/tc_purchase.pdf).

2.2 Quotation Accuracy

Before submitting a quotation, suppliers must:

- (a) examine all information relevant to the risks and contingencies and other circumstances having an effect on the quotation; and
- (b) satisfy themselves:
 - (i) that the price is correct; and
 - (ii) that it is financially and practically viable for them to enter into and perform the contract.

2.3 Quotation Lodgement

Quotations (including all supporting information, if any) must be fully received by the Closing Date. Suppliers should notify the UNSW Contact Person in writing on or before the Closing Date and Time if they find any discrepancy, error or omission in this RFQ.

Suppliers are asked to complete Part 4 of this RFQ document. Prices, responses and other information provided in the quotation must be in writing and in English.

2.4 Corruption or Unethical Conduct

Suppliers must comply with the requirements of the UNSW Code of Conduct which is available at <https://www.gs.unsw.edu.au/policy/documents/codeofconduct.pdf> and must disclose any conflicts of interests in their quotation.

2.5 Quotation Validity

It is not intended by UNSW or the supplier that an issue of a RFQ or a response to it commits, obligates or otherwise creates a legal relationship in respect to entering into a contract with that party. However, any quotation lodged with UNSW will constitute an irrevocable offer by the supplier, which remains open and capable of acceptance until **twelve months** from the RFQ closing date.

2.6 Acceptance of a Quotation

UNSW is not bound to accept the lowest or any quotation. UNSW shall not be in any circumstances responsible for any costs incurred by a respondent in preparing and submitting a quotation. Acceptance of a quotation or part of a quotation will be subject to the UNSW and the successful supplier to enter into a written agreement and/or the placement of a Purchase Order.

2.7 Disclosure Information

Following UNSW's decision, all suppliers will be notified of the outcome of their submitted quotations. Details of this quotation and the outcome of the quotation process may be disclosed in accordance with the *Government Information (Public Access) Act* (NSW).

2.8 UNSW contact person

All communications must be issued to the UNSW contact person defined in part 1 RFQ details.

3. REQUIREMENTS (to be completed by UNSW)

Functional requirements	4 laser, Cell Sorter. For multi-colour cell sorting of infectious or genetically modified organisms in a contained biosafety class II cabinet.
Description of goods and/or services	<p>Laser Configuration:</p> <ul style="list-style-type: none"> • 405nm: • 488nm: • 640nm: • 561nm: <p>Inclusions:</p> <ul style="list-style-type: none"> • Class II Biosafety Cabinet • Workstation and Ergonomic Stand • Automated Cell Deposition Unit (ACDU), for plate sorting • Delivery and Installation • 12 months warranty <p>Discount for trade-in of 3-laser 12-colour BD FACSAria IIu</p>
Delivery address	<p>PC3 Laboratory, Immunovirology and Pathogenesis Program,</p> <p>The Kirby Institute, Level 5 Wallace Wurth Building, UNSW Sydney</p>

Delivery terms (Incoterm 2010)	Quotation must include DDP (Delivery Duty Paid) or DAP (Delivered At Place) to the specified delivery address.
Installation, commissioning and acceptance testing	The quotation must include installation, commissioning and acceptance testing. Please list the acceptance testing your organisation will provide.
Warranty period	12 months warranty (comprehensive service maintenance agreement to be offered post warranty period).

4. SUPPLIER'S RESPONSE (to be completed by supplier)

4.1 Supplier's Information *(to be completed only if it is the first time the supplier is dealing with UNSW and does not have a vendor account already created in UNSW's system)*

If a Company, the Registered Company Name	BECKMAN COULTER AUSTRALIA PTY LTD
If a Partnership, the Partnership Name	NA
If an Individual, the Individual's Full Name	NA
Trading Name	BECKMAN COULTER AUSTRALIA PTY LTD
Australian Business Number (ABN) or Country Equivalent (e.g. Business Registration Number)	81 002 011 672
Australian Company Number (ACN) or Country Equivalent (e.g. Business Registration Number)	002 011 672
Registered Office (if a company)	23-27 Chaplin Drive, Lane Cove NSW 2066
Site Address (principal place of business)	Same as above
Postal Address (principal place of business)	Same as above
Main Switchboard Telephone Number	61 2 98446000
Company Email Address	sales_aust_nz@beckman.com
Main Point of Contact	Name : Mathi Appavoo Position: Senior Account Manager Phone : 0438 577 611 Email : mappavoo@beckman.com
Bank details	Annexure 1
Insurance Details:	<i>Please attach copies of the certificates of currency for those insurances listed below.</i>
Public and Product Liability Insurance Cover	Value:US\$25,000,000 Expiry: 01/07/2018 Annexure 2
Professional Liability Insurance Cover	Value:US\$25,000,000 Expiry: 01/07/2018 Annexure 2
Workers Compensation Insurance	Annexure 3

4.2 Supplier's offer to meet the requirements outlined in Part 3

Please provide a **fixed price quotation** in \$AU or in foreign currency with itemised costs for goods and/or services, delivery, installation, commissioning and acceptance testing.

Please also include:

- a list of installation site requirements (power, specialty gases, vibration limits, etc.), if applicable (e.g. in the case of scientific instrumentation);
- training offered on the goods and/or services covering safe operation, if applicable (e.g. in the case of scientific instrumentation);
- operating, maintenance and any other manuals required to operate the goods and/or services;
- acceptance tests which need to be successfully completed in the presence of UNSW technical staff in order for UNSW to accept the goods and/or services;
- a timeline detailing expected shipping, delivery, installation and training dates; fully inclusive warranty (including parts, labour and any applicable shipping and travel costs); and
- any offer of extended warranty or service.

Guide Note: Not all columns might apply to your RFQ, please delete columns from the table as required.

Description (add rows if required)	Units of Measure	Qty	Cost (excl. GST)	Delivery lead-time

QUOTATION

Date:
11 September 2017

Your Reference:

To:
The Kirby Institute, UNSW
Immunovirology and Pathogenesis
Program
Wallace Wurth Building, NSW 2052
Australia

Our Reference:
LSR/11090c/MA/9-2017

Fax Orders: 1800 060 879
Address: PO Box 218, Gladesville 2111
Customer Service: 1800 060 878

Attention:
Dr Mee Ling Munier

Fax:
Phone: (02) 9385 0470
Email: cmunier@kirby.unsw.edu.au

Proposal for:
MoFlo Astrios EQs 4-laser system

Delivery:
4-8 WEEKS

Standard Terms and Conditions apply. This quote is valid for 30 days, unless otherwise stated.

We wish to thank you for the opportunity to submit this quotation. May we express the hope that it meets with your approval. We look forward to being of service.

Yours faithfully
BECKMAN COULTER PTY LTD

Signed: _____
MATHI APPAVOO
ACCOUNT MANAGER NSW/ACT
Life Sciences

QUOTATION

Customer: KIRBY INSTITUTE, UNSW

Page: 3 of 3

Date: 11/9/2017

NSW 2052

Quotation No: LSR/11090c/MA/9-2017

Item No	Qty	Part No	Description	Price
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GOLD SERVICE CONTRACT PRICE:

Note: The Astrios comes with a 12 month warranty. Annual Gold Service contract price is quoted below, which covers after warranty expires. Please note that a maximum of 1-laser replacement is covered under Gold service contract and additional laser cover can be purchased if required.

1.	1	<u>A92920</u>	GOLD SERVICE CONTRACT	\$56,123.00
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PLEASE NOTE: THE PRICING IS CONFIDENTIAL.



Re : Banking details Beckman Coulter Australia Pty Ltd

Bank : Westpac Banking Corporation
Branch code: 032184
Account No: 279734
A/C Name: Beckman Coulter Australia P/L
Swift Code: WPACAU2S

Banking Corporation 141		Westpac Westpac Banking Corporation GLADESVILLE NSW		DEPOSIT	
/				Date	/ /
or credit of		No. chq's	Paid in by (Signature)	Cash	•
A/c no.	279734			Cheques See Reverse	•
				Total \$	•
For CREDIT of BECKMAN COULTER AUSTRALIA PTY LTD ACN 002 011 672					
⑈032⑈184⑈ 27⑈9734⑈ 50					
or statement verification					

28 June 2017

CERTIFICATE OF CURRENCY PUBLIC PRODUCT LIABILITY INSURANCE

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE HOLDER. IT DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICY. IT IS PROVIDED AS A SUMMARY ONLY OF THE COVER PROVIDED AND IS CURRENT ONLY AT THE DATE OF ISSUE. FOR FULL PARTICULARS, REFERENCE MUST BE MADE TO THE CURRENT POLICY WORDING

Insured

Danaher Corporation, including Beckman Coulter Australia Pty Ltd, AB Sciex, Australia Pty Ltd, Beckman Coulter Australia Pty Ltd, Coulter Electronics Pty. Limited, Danaher Australia Finance Pty Ltd, Danaher Australia Holding Pty Ltd, DiagDanaherstic Systems Laboratories Australia Pty Ltd, DJ Acquisition Pty Ltd, Hach Pacific Pty Ltd, IAF Corporation Pty Limited, Implant Direct Oceania Pty Limited, Inhibin Pty Limited, Kerr Australia Pty Limited, Kerr Australia Holding PTY LTD, Leica Biosystems Melbourne Pty Ltd, Leica Microsystems Australia Holding Pty Ltd, Leica Microsystems Pty Ltd, Danaherbel Biocare Australia Pty Ltd, Ormco Australia Holding Pty Ltd, Ormco Pty. Limited, Pall Australia Pty Ltd, Radiometer Australia Holding Pty Ltd, Radiometer Medical Sales Pty Limited, Radiometer Pacific Pty Limited, Phenomenex Australia Pty Ltd, Nobel Biocare Australia Pty. Ltd and/or its/their subsidiary companies and/or related bodies corporate, as defined in the Corporations Act 2001, (including those acquired or incorporated during the Period of Insurance) for their respective rights, titles and interests.

Period of Insurance

From 4:00pm local time at the place of the Insured's head office on 1 July 2017 to 4:00pm local time at the place of the Insured's head office on 1 July 2018

Any subsequent period for which the Insured has requested and the Insurer has accepted.

Insurer

NAME	POLICY NUMBER	PARTICIPATION %
AIG	Primary – 0000191908 Excess - 0000181362	100

Covering

Public and Products Liability

All sums which the Insured shall become legally liable to pay for Compensation in accordance with the law of any country in respect of:

- Personal Injury
- Property Damage

As a result of an Occurrence and happening in connection with the Insured's Business or Products.

Limits of Liability

The limit of the Insurer's liability:

- i. shall apply exclusive of indemnity provided for under Additional Payments;
- ii. shall not exceed the following amounts except as otherwise provided in the Policy;

General Liability

The Australian Dollar equivalent of USD\$25,000,000 any occurrence or series of occurrences arising from one originating cause

Product Liability

The Australian Dollar equivalent of USD\$25,000,000 any one occurrence or series of occurrences arising from one originating cause and in the aggregate during the period of insurance

Queensland Consumer Protection Liability

Section 43 of the Electrical Safety Regulation 2002 prescribes the insurance requirements for an Electrical Contractor Licence. A contract of insurance approved by the chief executive is as follows:

AUD\$50,000 each occurrence in respect of Consumer Protection Liability (Queensland Only)

Indemnity is subject to the terms and conditions of the Policy, including any applicable Sub-Limit of Liability and Deductible.

In accordance with the ongoing commitment by Marsh to quality management philosophies, this certificate has been verified for accuracy of content by:

Yours faithfully,

Shalendra Varma - Principal

issue date

07/06/17

print date

07/06/17

Pradeep Mucherla
BECKMAN COULTER AUSTRALIA PTY LTD
23-27 CHAPLIN DRIVE
LANE COVE WEST NSW 2066

Dear Sir/Madam

statement of coverage

The following policy of insurance covers the full amount of the employer's liability under the *Workers Compensation Act 1987 (NSW)*.

valid until
30/06/2018

policy number

108354001

legal name

BECKMAN COULTER AUSTRALIA PTY LTD

trading name

abn

81 002 011 672

acn

-

industry classification number (WIC)

461200

industry

Professional Equipment Wholesaling

number of workers*

62

wages⁺

\$7,950,269.00

* Number of workers includes contractors/deemed workers

+ Total wages estimated for the current period

important information

Principals relying on this certificate should ensure it is accompanied by a statement under section 175B of the Workers Compensation Act 1987 (NSW). Principals should also check and satisfy themselves that the information is correct and ensure that the proper workers compensation insurance is in place, ie. compare the number of employees on site to the average number of employees estimated; ensure that the wages are reasonable to cover the labour component of the work being performed; and confirm that the description of the industry/industries noted is appropriate.

A principal contractor may become liable for any outstanding premium of the sub-contractor if the principal has failed to obtain a statement or has accepted a statement where there was reason to believe it was false.

Yours faithfully,

Jason McLaughlin
General Manager, Loss Prevention & Pricing



007-D-ICARE_P0001_R0000037717-006347

NI_WI_CERT_CURRENCY_EX

MoFlo™ Astrios Site Inspection Checklist

Biosafety Cabinet Site Inspection Checklist

General Facility Requirements

Please record all non-conformities in the area provided at the end of this document.

1. Use a Data Logger tool to measure the ambient temperature of the lab. Power on the logger and leave it running until you have completed inspection. When you have completed the inspection, download the data and attach the results with this document.

Is the ambient temperature of the lab 15 – 26° C (59 – 78° F) with no more than +/- 2° C (+/- 3.6° F) fluctuation per hour over a minimum two hour period?

Yes No

2. Does the person who is responsible for completing this form have a copy of the sales order acknowledgement? (The information on the sales order is necessary in order to determine the facilities requirements for the options that were ordered.)

Yes No

3. Inspect the delivery and storage locations.

- a. Is there 110 cm (47 in) x 205 cm (81 in) clearance on all doorways from the delivery location from the storage location to the lab?

Yes No

- b. Is the pathway clear from the storage area to the lab?

Yes No

- c. If applicable, is an elevator present?

Yes No

- d. The typical MoFlo™ Astrios shipping weight for the instrument crate is 680 kg (1500 lbs), and the accessory crate is approximately 363 kg (800 lbs.) Can the shipping, storage and installation locations accommodate this weight?

Yes No

- e. The typical Biosafety Cabinet shipping weight is 461 kg (1016 lbs.). Can the shipping, storage and installation locations accommodate this weight?

Yes No

- f. The table below lists all possible crate dimensions. Can the delivery and storage locations accommodate all of the crates that will arrive at your site?

Yes No



Crate	Dimensions
Astrios	205 cm (81 in) x 160 cm (63 in) x 120 cm (47 in)
Accessories	193 cm (76 in) x 137 cm (54 in) x 86 cm (34 in)
Biosafety Cabinet	216 cm (85 in) x 178 cm (70 in) x 121 cm (48 in)

- Is the floor in the installation location level and stable?
 Yes No
- Typically the MoFlo™ Astrios occupies a 3 m x 2 m (10 ft. x 6 ft.) area. Does the installation location provide sufficient space to remove the Laser Engine from the right side of the Instrument? There needs to be at least 1.22 m (4 ft.).
 Yes No
- The MoFlo™ Astrios instrument requires at least two 110V 20 A minimum or 230V 10 A minimum ratings for wall outlets. Measure and record the output from all electrical outlets in the lab.
- The Biosafety Cabinet instrument requires one 110V 20 A minimum or 230V 10 A minimum ratings for wall outlets. Measure and record the output from all electrical outlets in the lab.

A Universal Power Supply (UPS) is shipped with MoFlo Astrios along with a 20A power cable and a pigtail cable allowing installation personnel to attach a crossover cable that is compatible with local power. Hardwiring the pigtail cable is also an option.

Note: Installation Personnel outside the U.S. must purchase a crossover cable compatible with local power if they are not hardwiring the UPS.

Outlet 1

UPS

10. Does the lab include a vortex mixer and a sonicating device near the instrument installation location?
 Yes No
11. Does the facility include a sink in which the waste tank can be emptied?
 Yes No
12. Is at least 4 L (10 gal.) of “mili Q” quality (DI) water available?
 Yes No
13. Is a phone located near the location for the Summit Workstation to facilitate troubleshooting?
 Yes No
14. Is an Internet connection available to connect with the Summit Workstation?
 Yes No
15. Inspect the installation area for windows that could direct sunlight onto the instrument and cause temperature fluctuations. HVAC vents or fans are not recommended directly above the MoFlo™ Astrios because they cause temperature fluctuations, vibration, and dust. Is the lab temperature controlled and free from smoke, dust, and vibration?
 Yes No
16. The customer is responsible for providing hard piping and fittings for in-house air lines.
- a. Is the customer providing in-house air (rather than purchasing a Jun-Air compressor from Beckman Coulter)?
 Yes No
 - b. If yes, will liquid nitrogen be used as the compressed air source? (See the notes regarding liquid nitrogen on page 5.)
 Yes No
 - c. If the customer is providing in-house air, does the in-house air source provide clean, dry air filtered to 0.3 micron at 689 kPa, 1.7 m³/hr (100 psi, 1 cfm) within the range of 586 kPa – 1379 kPa (85 – 200 psi)?
 Yes No
17. The following options each require a dedicated power circuit: Water Bath, Compressor Module, Aerosol Evacuation, and Biosafety Cabinet.
- a. Can the customer site accommodate each option that was ordered?
 Yes No
 - b. If any of these accessories are to be located outside of the instrument lab then an access point(s) will be required through the wall.

Liquid Nitrogen

Liquid nitrogen can be used as an alternative pressure source for the MoFlo™ ASTRIOS. However, all tubing, connections, regulators, etc must be supplied, installed, and maintained by the customer prior to MoFlo™ ASTRIOS installation.

- Beckman Coulter recommends a 160 L (42.26 gal.) cryogenic dewar, which measures 1.52 m (5 ft.) high with a diameter of 50.8 cm (20 in).
- A larger tank is an alternative; it is 230 L (60.75 gal.) and measures 1.52 m (5 ft.) high with a diameter of 63.5 cm (25 in). The pressure range of the tank must be 1585.79 – 1723.68 kPa (230 – 250 psi.)
- Extra regulation is required as the instrument requires the liquid nitrogen to run in the pressure range of 0 – 689 kPa (0 – 100 psi.)
- Generally, one 160 L (42.26 gal.) dewar will last 15 working days at 8 hours of operation per day. The MoFlo™ ASTRIOS consumes approximately 31.1 L /per minute (1.1 cfm) of liquid nitrogen.

