



An interactive education program for secondary school students that highlights the application of biotechnology to crop improvement.

TEACHER NOTES



**A joint initiative of the
Australian Centre for Plant Functional Genomics
and the
Molecular Plant Breeding Cooperative Research Centre**



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ABOUT GET INTO GENES

What is *Get into Genes* all about?

Get into Genes is an interactive education program for secondary school students that highlights the application of biotechnology to crop improvement. It provides students with an insight into the relationship between molecular biology, genetics and plant breeding.

Get into Genes is a two-hour workshop.

- The session begins with an introductory presentation.
- Students then rotate through four workstations. At each workstation, they are given a worksheet to complete.
- The session ends with a presentation examining the genetic engineering of plants and providing relevant examples of current research being undertaken by the organisations that support the program, the Australian Centre for Plant Functional Genomics (ACPFG) and the Molecular Plant Breeding Cooperative Research Centre (MPBCRC).

There is a maximum of 30 students per session. There is no minimum (within reason), however small groups will be encouraged to combine if convenient.

For Year 10 students, the four workstations are:

- **Conventional plant breeding techniques:** understanding variation, comparing phenotype and genotype, plant reproduction and inheritance.
- **DNA extraction:** cell structure and biochemistry.
- **Gel electrophoresis:** how we can 'sort' DNA fragments by size.
- **Restriction enzymes / molecular markers:** the concepts behind DNA fingerprinting, using restriction fragment length polymorphisms (RFLPs).

For Year 12 students, teachers choose between the format above and the PCR option:

- **Conventional plant breeding techniques:** understanding variation, comparing phenotype and genotype, plant reproduction and inheritance.
- **PCR:** the principles behind the polymerase chain reaction and setting up a PCR.
- **Gel electrophoresis:** how we can 'sort' DNA fragments by size.
- **PCR / molecular markers:** how PCR can be used to identify molecular markers and track them in a breeding program.

When the PCR workstations are chosen, information is provided to schools to enable the DNA extraction to be run as a pre-visit activity and the restriction enzyme workstation to be run as a post-visit activity.

Teachers of Year 12 students are provided with follow-up assessment materials that can be used as a School-Assessed Coursework task.

Who is it suitable for?

Get into Genes can be tailored to suit students from Years 9 to 12, studying biology, agriculture or general science. In particular, the concepts addressed complement the curriculum for VCE Biology, Units 3 and 4. ***Get into Genes* provides an excellent context for examining how humans manipulate DNA.**

When and where does it take place?

Mondays and Tuesdays:

Get into Genes is held in the Reid Building, Faculty of Science, Technology and Engineering at La Trobe University in Bundoora. The custom-designed teaching laboratory opened in August 2008.

A map of the area is provided on page 8. Bus parking is available. Tours of facilities in the Faculty of Science, Technology and Engineering may be available upon request.

Wednesdays:

Get into Genes is held in the Sonenberg Laboratory, Natural Philosophy building, University of Melbourne.

A map of the University of Melbourne is provided on page 8. The Natural Philosophy building is marked '143' on the map and the entrance indicated by an arrow. The Sonenberg Laboratory is on the first floor. Please note there is no wheelchair access. Bus parking may be available, depending on the date and time of the visit. Please phone if parking is required.

Should you need to contact staff **on the day of your session** please phone Belinda on **0400 042 297**.

Workshops may be available to rural and regional schools (as an outreach program) subject to funding.

How much does it cost?

The *Get into Genes* workshop is funded by the MPBCRC, ACPFG and La Trobe University is FREE of charge to students and teachers. The only cost to students is transport.

How do I book?

Contact

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Education officer *Get into Genes*

Molecular Plant Breeding CRC

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or see our website at www.getintogenes.com.au

Get into Genes at La Trobe University

In August 2008 Get into Genes moved into its brand new lab space!

We are now located in Room 232, on the second floor of the Reid Building at La Trobe University, Bundoora Campus. See map on page 8, position D5. Alternatively, a pdf may be downloaded from the La Trobe University website <http://www.latrobe.edu.au/bq/assets/images/drawings/bun-site.pdf>

If you are travelling by bus, you should enter the inner campus from the Southern Gatehouse entry (E9). Security will be notified that you have a Get into Genes booking and will know to expect you.

After entering the University, the bus should travel north and drop students at the David Myers Building (E7). A Get into Genes staff member will meet you to take you to the Laboratory.

Please contact Belinda on 0400 042 297 if you have difficulties finding the David Myers Building.

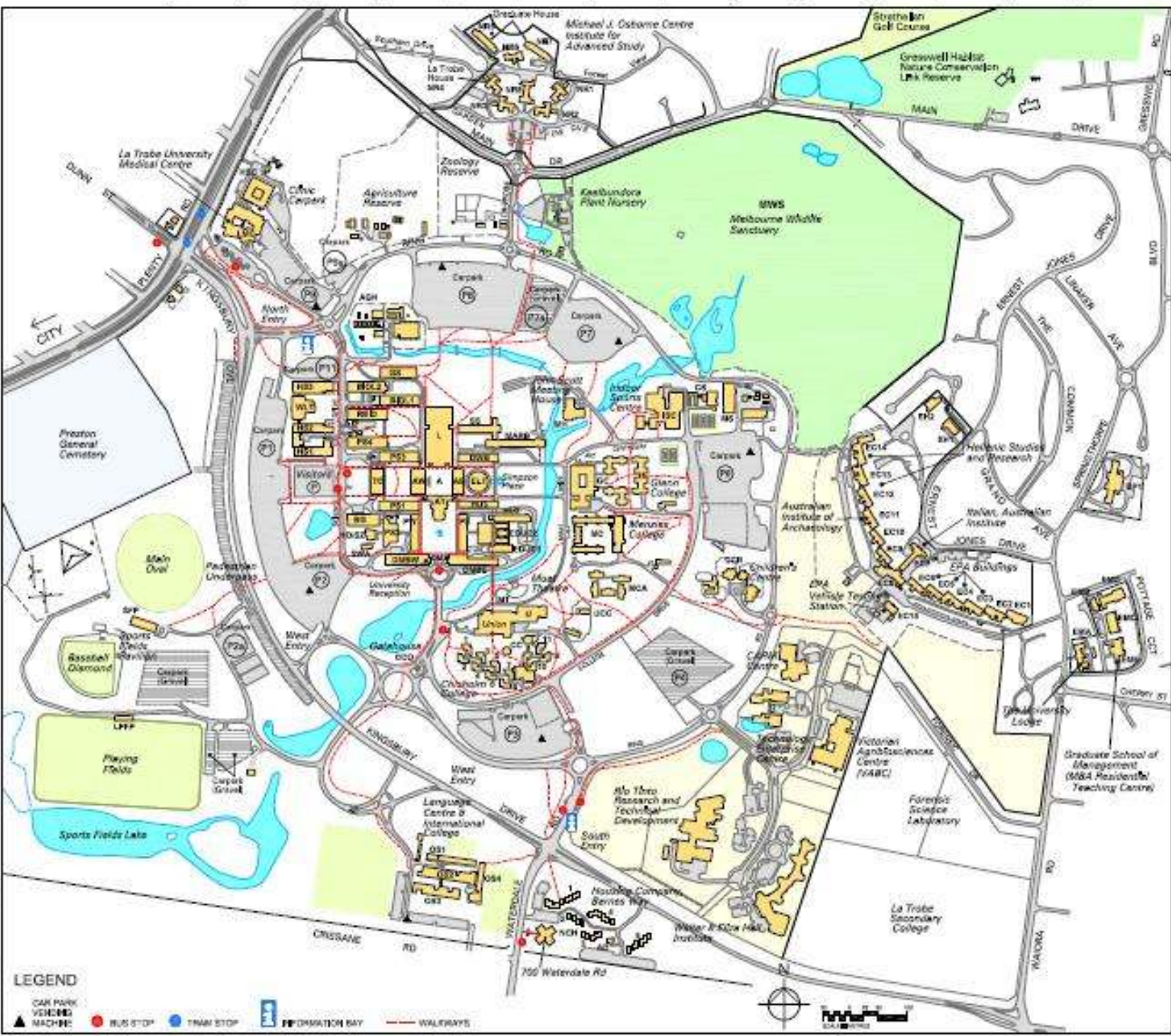
It takes approximately 10 minutes to walk from the David Myers drop-off point to the Get into Genes lab.

The area set aside for buses to wait on the inner campus is Carpark 6 (I6). This is reached via College Drive and buses do not have to exit the inner campus area.

A B C D E F G H I J K L M N

LEGEND

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Building Name	Module	Ref
Agres	A	E9
Agres East	AE	E9
Agres Theatre	AT	E7
Agres West	AW	E9
Agriculture Reserve	AR	D3
Beth Gleason Building	BG	D7
Biological Sciences 1	BIO1	D5
Biological Sciences 2	BIO2	D5
SM La Trobe Hotel	EPI	N8
Children's Centre	CCR	B8
Children College	CC	F9
David Myers Building-Centre	DMS	E7
David Myers Building-East	DMS E	E7
David Myers Building-West	DMS W	D7
Donald Whitford Building	DWB	F6
East Lecture Theatre	ELT	F6
Educator 1	EDUC1	F7
Educator 2	EDUC2	F7
Gatehouse	GCH	E9
George Slinger Building	GS	D3
Glass House Complex	AH	D4
Glan College	GC	D8
Graduate House	GHS	F1
Graduate School Of Management	GSM	N8
Health Sciences 1	HS1	C8
Health Sciences 2	HS2	C8
Health Sciences 3	HS3	C8
Health Sciences Clinic	HSC	D3
Health Studies	HS1-3	L8
Health Studies	HS1-3	N8
Hooper & Gifford	HOGS	D7
Housing Operatory, Barnes Way	NCH	D12
Humanities 2	HU2	F7
Humanities 3	HU3	E7
Institute For Advanced Study	IAS	F1
International College	IC	D12
John Scott Moulding House	JSH	D8
Landscaping Depot	LD	H5
La Trobe Medical Centre	LMC	E9
Library	L	E6
Lower Playing Field Pavilion	LPP	A10
Maintenance & Central Store	MS	F8
Marsh Building	MB	F8
Melbourne Wildlife Sanctuary	MWS	J8
Menzies College	MC	D7
Menzies College Annex	MCA	D6
Model Theatre	MT	F8
Photobank East	PE	E7
Photobank West	PW	E7
Physical Sciences 1	PS1	D7
Physical Sciences 2	PS2	D7
Physical Sciences 3	PS3	D6
Physical Sciences 4	PS4	D6
Research & Development Park	RAD	J6
RJ. Relf Building	RJ	D6
South Sciences	SS	F8
South West Annex	SWA	D7
Sports & Recreation Centre	JRC	H8
Sports Field Pavilion	SFP	A8
The Terrace	FTL	N8
The University Lodge	UWL	N8
Thomas Cherry Building	TC	D6
Union	U	F8
Union Parents & Children's Child Care Centre	UCC	D8
West Lecture Theatre	WLT	D5

LEGEND

	CAR PARK
	VEHICLE
	MACHINE
	BUS STOP
	TRAIN STOP
	INFORMATION BAY
	WALKWAYS

LA TROBE UNIVERSITY

BUNDOORA CAMPUS SITE PLAN

DATE: 10/01/2011
 PREPARED BY: BUILDINGS & GROUNDS - LA TROBE UNIVERSITY

A B C D E F G H I J K L M N



SAFETY AND EQUIPMENT

Get into Genes does not involve the handling of harmful laboratory chemicals. However, even everyday chemicals such as methylated spirits are classified as hazardous substances.

We strive to provide a safe environment for students at all times and to model good safety practices. Students should be encouraged to wear clothing appropriate to a laboratory, such as closed-in shoes. They will be provided with a lab coat to wear during the workshop, and with gloves and safety glasses when necessary.

Students should not eat or drink in the laboratory.

At the beginning of the session, the students are reminded that they are within a functional science facility and are requested not to enter any other rooms (other than the toilets) or laboratories unaccompanied.

If there are any specific health problems that we may need to know about, please try to inform us before the workshop. We also request that teachers keep a check on unruly behaviour, as this is not only distracting to staff and other students but also presents a safety risk in a laboratory situation. Students whose behaviour poses a risk to others will not be permitted to remain in the laboratory.

A risk assessment of the *Get into Genes* workshop is available on request.

The only equipment students need bring to the workshop is a pen or pencil.