

# Bevan Weir

BTech, PhD

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## Education

- 2002–2006 **Doctor of Philosophy**, *The University of Auckland*.  
(Microbial Ecology)
- 1998–2001 **Bachelor of Technology (Honours)**, *The University of Auckland*.  
(Biotechnology)

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## PhD thesis

- title *Systematics, Specificity, and Ecology of New Zealand Rhizobia*
- supervisors Dr. J.M. Young, Dr. S.J. Turner, and Prof. W.B. Silvester
- description My thesis investigated rhizobia (nitrogen-fixing root nodule bacteria) associated with New Zealand endemic legume plants and exotic invasive weeds. The research involved bacterial systematics by both molecular and phenotypic means, investigation of symbiotic genes, plant inoculation, and greenhouse growth studies. The research was conducted at Landcare Research in Auckland. It can be accessed online at [www.rhizobia.co.nz/PhD/](http://www.rhizobia.co.nz/PhD/)

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## Work experience

- November 2006–Present **Research scientist**, *Corbans Viticulture*, Auckland, New Zealand.  
I investigated the fungal causal agent of 'Esca disease' in grapevines through isolation of fungal isolates from symptomatic xylem tissue. Fungi were cultured and identified through PCR and sequencing. In another project I developed a 'database t-RFLP' fungal endophyte detection system. This system allowed for the first time the entire fungal community of grapevine endophyte tissue to be investigated. This was used in a research aspect to access the performance of pathogen treatment procedures, and in general production to detect specific pathogens.  
[www.corbansviticulture.co.nz](http://www.corbansviticulture.co.nz)
- March 2005–June 2007 **Research technician**, *Landcare Research*, Auckland, New Zealand.  
I developed microsatellite markers for Heather Beetle (*Lochmaea suturalis*), a recently introduced biocontrol agent for the invasive weed Heather (*Calluna vulgaris*). This involved building a clone library from *L. suturalis* DNA, and probing the library with repeat sequence oligonucleotides. In a separate project I amplified and sequenced several genes from New Zealand and Australian *Cordyline* species to complement an existing study on variation using AFLP.  
[www.landcareresearch.co.nz](http://www.landcareresearch.co.nz)
- 2001 **Laboratory demonstrator**, *School of Biological Sciences*, The University of Auckland.  
I demonstrated for the undergraduate class "Molecular and Cellular Regulation". This involved teaching stage 3 undergraduate students laboratory procedures and techniques, as well as marking laboratory assignments.
- November 2000–February 2001 **Laboratory technician**, *Forest Research*, Rotorua, New Zealand.  
I developed a rapid inexpensive protocol for DNA extraction from pine needles.  
[www.scionresearch.com/ensis+genetics.aspx](http://www.scionresearch.com/ensis+genetics.aspx)

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## Skills

- microbiology I am experienced in microbiological laboratory practice and techniques including: microscopy and aseptic technique, as well as bacterial, fungal, and yeast culturing, and identification using genotypic and phenotypic analyses. I have specific knowledge on the isolation, analysis, and *in planta* culture of legume symbionts; and fungal pathogen testing on grapevines.
- molecular biology I am experienced in standard techniques including: DNA extraction, primer design, PCR, gel electrophoresis, southern blotting, DNA sequencing, t-RFLP, flame-ionisation gas chromatography, clone library construction and screening, microsatellite development and use, and molecular cloning.
- phylogenetics I am experienced with latest methods of phylogenetic analysis of DNA and proteins, including Maximum Likelihood and Bayesian methods. I am confident in use of PAUP\*, Modeltest, ProtTest, ClustalX, Phylip, MatGat, PhyML, and MrBayes.
- computing I have a high level of computer literacy. I am experienced with standard applications such as Microsoft Windows, Word, Excel, and Access, as well as the typesetting software  $\LaTeX$ . I have used the statistical packages GenStat, Systat, and R. I have good knowledge of website design, HTML and CSS, and networking. I am also competent in Linux and Mac, and have some knowledge of Java programming.
- communication / team work I have excellent communication skills, and I enjoy public speaking. I represented my secondary school in debating and speeches, and have given many scientific presentations to my peers as well as end-users and the general public. I have a high level of written communication skills including the ability to write clear, concise reports. I have worked on team projects at University, as well as in a research technician role in later employment, working in multidisciplinary teams of microbe/insect systematics and weed ecology.
- other I am a highly confident, motivated, and organised person. I enjoy working in a challenging environment where I can continuously learn and extend myself. I have a fascination with all fields of science but particularly microbial taxonomy, ecology, evolution, and symbiosis/pathogenicity. I am also interested in musical theory, and play the bass guitar.

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## Awards / Grants

- 2005 **Alan Gibson Memorial award for best student oral presentation, 14th Australian Nitrogen Fixation Conference, Katoomba, Australia.**
- 2004 **University of Auckland graduate research fund grant.**
- 2004 **Royal Society of New Zealand travel grant.**
- 2004 **New Zealand Microbiology Society student travel grant.**

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## Journal Publications

**Weir, B.S., Turner, S.J., Silvester, W.B., Park, D.-C., and Young, J.M. (2004).** Unexpectedly diverse *Mesorhizobium* strains and *Rhizobium leguminosarum* nodulate native legume genera of New Zealand, while introduced legume weeds are nodulated by *Bradyrhizobium* species. *Applied and Environmental Microbiology*, 70(10): 5980–5987. Online.

**Young, J.M., Park, D.-C., and Weir, B.S. (2004).** Diversity of 16S rDNA sequences of *Rhizobium* spp. implications for species determinations. *FEMS Microbiology Letters*, 238(1): 125–131. Online.

## Popular Publications

**Weir, B.S., Graham, A.B. (2008).** Development of an advanced PCR technique to detect grapevine trunk diseases. *The Australian & New Zealand Grapegrower & Winemaker*, 528:

## Forthcoming Publications

**Harman, H.M, Weir, B.S, Wells, S.J, Howitt, R.L.J (submitted)** Isolation and characterization of microsatellite loci from *Lochmaea suturalis*, the heather beetle (Coleoptera: Chrysomelidae), a pest in Europe and a biocontrol agent in New Zealand. *Molecular Ecology Resources*.

**Weir, B.S., Turner, S.J., Young, J.M. (Unpublished).** Two novel specific *nodA* genotypes from *Mesorhizobium* spp. that nodulate New Zealand native legumes.

**Weir, B.S., Silvester, W.B., Young, J.M., and Turner, S.J. (Unpublished).** Nodulating and nitrogen-fixing *Mesorhizobium*, *Rhizobium*, and *Bradyrhizobium* associated with endemic and introduced legume species of New Zealand.

**Graham, A.B., Johnston, P.R., Weir, B.S. (Unpublished).** Three new *Phaeoacremonium* species on grapevines in New Zealand.

## Conference Presentations

**Weir B.S., Graham, A.B. (2007)** Joint NZMS–NZSBMB Conference, Wellington, New Zealand, 27–30 November 2007. "t-RFLP for identification of grapevine fungal pathogens and analysis of endophyte population changes after Hot Water Treatment" [Talk]

**Weir B.S., Graham, A.B. (2007)** 16th Biennial Australasian Plant Pathology Society Conference, Adelaide, Australia, 24–27 September 2007. "First report of a new *Phaeoacremonium* species associated with black streaking symptoms in grapevine in New Zealand" [Talk]

**Graham, A.B., Weir B.S. (2007)** 16th Biennial Australasian Plant Pathology Society Conference, Adelaide, Australia, 24–27 September 2007. "Repopulation of grapevine woody tissue with fungi after hot water treatment" [Talk]

**Harman, H.M., Weir, B.S., Fowler, S.V. (2006)** New Zealand Plant Protection Society. Blenheim, 8–10 August 2006 "Impact of Rearing Method on Genetic Variation in a Biological Control Agent, Heather Beetle" New Zealand Plant Protection 59 pg. 362 [Poster]

**Weir B.S. (2006)** Centre for Biodiversity and Biosecurity Seminar, Auckland, New Zealand; 16 May 2006. "Origins of rhizobia in New Zealand" [Talk]

**Weir B.S., Turner S.J., Silvester W.B., Park D-C., Young J.M. (2005)** 14th Australian Nitrogen Fixation Conference, Katoomba, Australia; 21–25th November 2005. "Identification and specificity of rhizobia nodulating the native and introduced legumes of New Zealand" [Talk]

**Weir B.S., Turner S.J., Silvester W.B., Park D-C., Young J.M. (2004)** New Zealand Microbiology Society (NZMS) 2004 annual conference, Palmerston North, New Zealand; 17–19th November 2004. "The diversity of Rhizobia nodulating woody legumes in New Zealand" [Talk]

**Weir B.S., Turner S.J., Silvester W.B., Park D-C., Young J.M. (2004)** 14th International Congress on Nitrogen Fixation, Beijing, China; October 2 – November 1, 2004. "Rhizobial diversity of New Zealand legumes" [Poster]

**Young J.M., Park D.-C., Weir B.S. (2004)** 14th International Congress on Nitrogen Fixation, Beijing, China; October 27 - November 1, 2004. "Diversity of 16S rDNA sequences of *Rhizobium* spp. Implications for species determinations" [Poster]

**Weir B.S., Turner S.J., Silvester W.B., Park D-C., Young J.M. (2004)** 10th International Symposium on Microbial Ecology (ISME), Cancun, Mexico; August 22–27, 2004. "Rhizobial diversity of New Zealand legumes" [Poster] and [Talk]

**Weir B.S. (2004)** Weed Ecology Workshop, Auckland, February 23, 2004. "Do symbiotic root bacteria affect legume weed invasion?" [Talk]

**Weir B.S., Turner S.J., Silvester W.B., Park D-C., Young J.M. (2003)** New Zealand Microbiological Society (NZMS) and Australian Society for Microbiology Joint Conference, Auckland, New Zealand; 29 August – 3 September 2003. "Rhizobia associated with New Zealand Legume Flora" [Poster]

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## Referees

Available on request