

## Garvan's Breakthrough Medical Research 2007 Osteoporosis Research Program Update

### Background

Pain, disability, loss of independence – these are the very human costs to the two million Australians that are living with osteoporosis. This bone disease affects more than **two thirds** of Australian women and over **one quarter** of Australian men over the age of 60.

Garvan's Osteoporosis team focuses on the links between genetic, hormonal and lifestyle influences on optimum bone mass. Garvan's Dubbo Osteoporosis Epidemiology Study (DOES), which began in the late 1980s is the longest running, large-scale epidemiological study of osteoporosis in the world. It focuses on identifying risk factors for fractures in both men and women as well as identifying new genes that are important to bone health.

### 2007 Highlights

#### Fracture Risk Calculator – World-First

In 2007 Garvan scientists developed a world-first graphically-based model for estimating the individual risk of hip fracture in men and women. If you are over 60, by simply entering your data on sex, age, history of prior fracture, number of falls in the past 12 months and weight or bone mineral density, the tool will calculate your individual risk of having a hip or any osteoporotic (fragility) fracture over the next 5 and 10 years. This will then allow you to make informed choices and, in consultation with your doctor, decide what steps you might wish to take to reduce that risk. **The calculator is ready to use right now at [www.fractureriskcalculator.com](http://www.fractureriskcalculator.com).**

#### Risk of Osteoporosis for Men and Women

Throughout the year, our scientists:

- Showed that an initial trauma fracture (of any bone in the body) increases the risk of subsequent fractures, particularly in men.
- Determined the risk factors for fragility fracture among men and women without obvious osteoporosis.
- Demonstrated the major increase in premature mortality after osteoporotic fractures in both men and women and identified the importance of bone density and its loss, as well as weight loss, for this outcome.
- Clarified the contribution of genetic factors to bone loss and fracture risk, and developed prognostic models that incorporated genetic information.

Below please find some recent press releases covering this work.

[http://www.garvan.org.au/news-events/news-archive/2007/media\\_release.2007-06-27.8075708161](http://www.garvan.org.au/news-events/news-archive/2007/media_release.2007-06-27.8075708161)  
<http://www.garvan.org.au/news-events/news/low-testosterone-in-men-doubles-the-risk-of-bone-fracture.html>

#### Bone Regulation Research

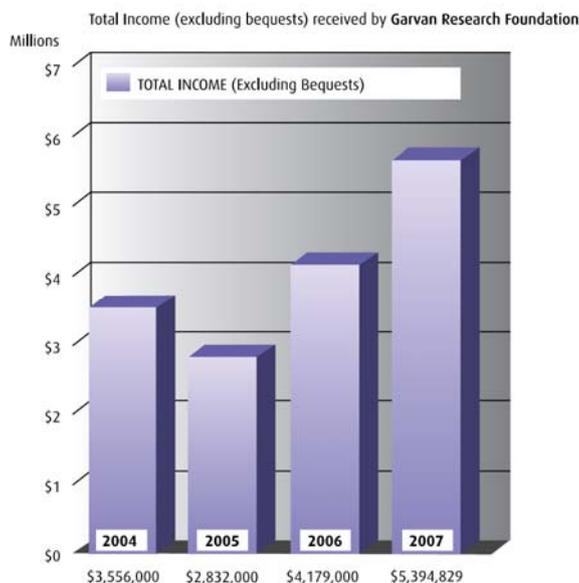
In 2007, the Bone Regulation team has

- Described a mechanism which stimulates the activity of bone stem cells leading to a greater production of bone.
- Identified a receptor in bone that links signals in the brain to increased bone mass and strength, indicating a potential therapeutic target for osteoporosis. (This project is a collaboration with Neuroscience Program researchers.)
- Linked genetic changes in vitamin D receptor activity to a pathway that is essential to bone growth, in addition to vitamin D's already known effect on calcium absorption.

## GARVAN AT A GLANCE - 2007

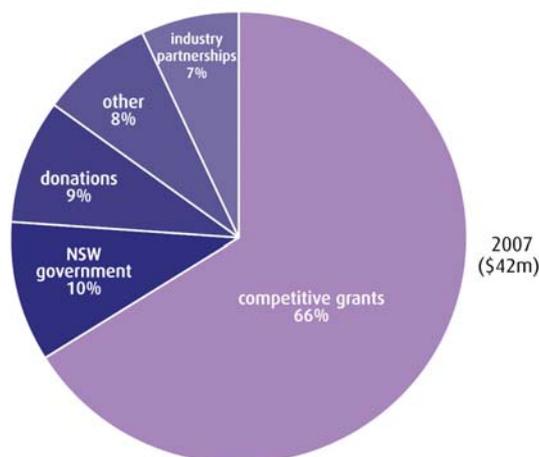
### Garvan Research Foundation Income Growth

Garvan Research Foundation is the marketing and fundraising arm of Garvan Institute. In 2007 donations from the public (excluding bequests) increased by **30%** to over **\$5.3 million**. In 2008 Garvan Research Foundation must raise at least **\$7.6 million** from the public to help fund the Institute's planned research program.



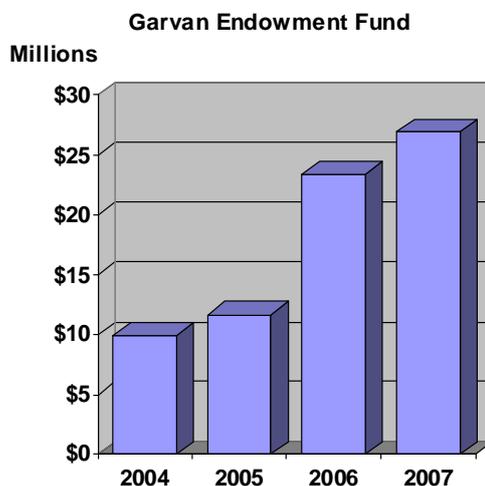
### Garvan Institute Sources of Income

Donations from the public constituted **9%** of the Institute's total income for 2007. This excludes earnings from our Endowment Fund.



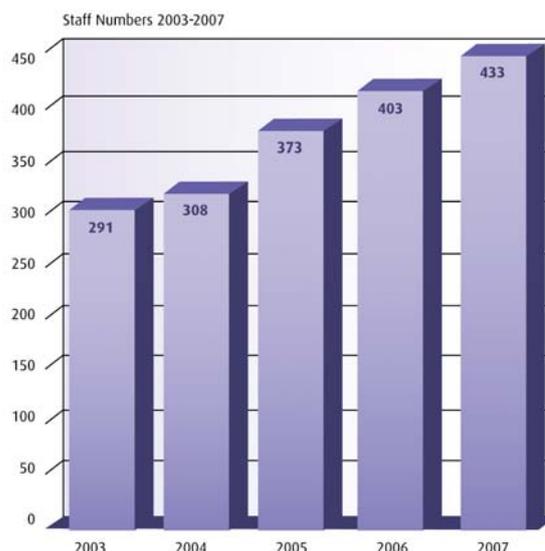
### Endowment Fund Growth

Garvan's Endowment Fund gives Garvan the security of predictable funding into the future. The fund has grown from \$10 million in 2004 to **\$27 million** in 2007.



### Growth of the Institute's Research Capacity

Over the past 5 years the Garvan has significantly increased our research capacity across our 5 program areas. Our staff numbers have grown by almost 50% since 2003.



### Garvan Publications

Breakthrough research by Garvan scientists appeared in **153** publications in 2007. Each paper published constitutes a **new piece of knowledge**, and scientists aim to publish in the most highly regarded journal in their research field. Each journal has an "impact factor" which is a common measure of its relative importance within a specific discipline. Research organisations use "average impact factor" measurements to determine the overall significance of their research output. For example, in 2007 Garvan achieved an **"average impact factor" of 8.2 for the top 80% of its publications**. This is an excellent result, well above the international benchmark.