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Benchmarking Australian Science Performance
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Figure 3: National performance across fields of science

Within each country, fields are listed in descending order, by citation rate relative to the European average citation rate in the same field. Field #1 corresponds to the leftmost bubble in the country's chart and #18 to the rightmost. Green fields indicate the country has a citation rate in that field above the European average; amber between the European and world averages; and red below the world average.

United States

1. Computer Science (green)
2. Engineering (green)
3. Medicine (green)
4. Mathematics (green)
5. Biochemistry, Genetics and Molecular Biology (green)
6. Chemistry (green)
7. Psychology (green)
8. Immunology and Microbiology (green)
9. Neuroscience (green)
10. Physics and Astronomy (green)
11. Veterinary (green)
12. Earth and Planetary Sciences (green)
13. Materials Science (green)
14. Environmental Science (green)
15. Pharmacology, Toxicology and Pharmaceutics (green)
16. Agricultural and Biological Sciences (green)
17. Chemical Engineering (amber)
18. Energy (amber)

Switzerland

1. Computer Science (green)
2. Engineering (green)
3. Mathematics (green)
4. Chemical Engineering (green)
5. Immunology and Microbiology (green)
6. Physics and Astronomy (green)
7. Chemistry (green)
8. Biochemistry, Genetics and Molecular Biology (green)
9. Medicine (green)
10. Environmental Science (green)
11. Pharmacology, Toxicology and Pharmaceutics (green)
12. Earth and Planetary Sciences (green)
13. Energy (green)
14. Agricultural and Biological Sciences (green)
15. Materials Science (green)
16. Neuroscience (green)
17. Veterinary (green)
18. Psychology (red)

Denmark

1. Energy (green)
2. Veterinary (green)
3. Medicine (green)
4. Environmental Science (green)
5. Physics and Astronomy (green)
6. Engineering (green)
7. Mathematics (green)
8. Earth and Planetary Sciences (green)
9. Psychology (green)
10. Chemical Engineering (green)
11. Materials Science (green)
12. Chemistry (green)
13. Pharmacology, Toxicology and Pharmaceutics (green)
14. Computer Science (green)
15. Agricultural and Biological Sciences (green)
16. Biochemistry, Genetics and Molecular Biology (green)
17. Immunology and Microbiology (green)
18. Neuroscience (amber)

Sweden

1. Veterinary (green)
2. Medicine (green)
3. Energy (green)
4. Computer Science (green)
5. Environmental Science (green)
6. Pharmacology, Toxicology and Pharmaceutics (green)
7. Chemical Engineering (green)
8. Chemistry (green)

9. Engineering (green)
10. Psychology (green)
11. Agricultural and Biological Sciences (green)
12. Neuroscience (green)
13. Earth and Planetary Sciences (green)
14. Biochemistry, Genetics and Molecular Biology (green)
15. Immunology and Microbiology (green)
16. Materials Science (green)
17. Physics and Astronomy (green)
18. Mathematics (green)

United Kingdom

1. Agricultural and Biological Sciences (green)
2. Psychology (green)
3. Computer Science (green)
4. Medicine (green)
5. Veterinary (green)
6. Biochemistry, Genetics and Molecular Biology (green)
7. Neuroscience (green)
8. Earth and Planetary Sciences (green)
9. Mathematics (green)
10. Environmental Science (green)
11. Pharmacology, Toxicology and Pharmaceutics (green)
12. Engineering (green)
13. Chemistry (green)
14. Physics and Astronomy (green)
15. Materials Science (green)
16. Immunology and Microbiology (green)
17. Energy (green)
18. Chemical Engineering (green)

Finland

1. Medicine (green)
2. Veterinary (green)
3. Psychology (green)
4. Environmental Science (green)
5. Pharmacology, Toxicology and Pharmaceutics (green)
6. Neuroscience (green)
7. Biochemistry, Genetics and Molecular Biology (green)
8. Energy (amber)
9. Mathematics (amber)
10. Agricultural and Biological Sciences (amber)
11. Immunology and Microbiology (amber)
12. Computer Science (amber)
13. Engineering (amber)
14. Physics and Astronomy (amber)
15. Materials Science (amber)
16. Earth and Planetary Sciences (amber)
17. Chemistry (amber)
18. Chemical Engineering (amber)

Canada

1. Medicine (green)
2. Veterinary (green)
3. Psychology (green)
4. Pharmacology, Toxicology and Pharmaceutics (green)
5. Computer Science (green)
6. Neuroscience (green)
7. Engineering (green)
8. Environmental Science (green)
9. Chemistry (green)
10. Immunology and Microbiology (green)
11. Biochemistry, Genetics and Molecular Biology (green)
12. Earth and Planetary Sciences (amber)
13. Energy (amber)
14. Materials Science (amber)
15. Mathematics (amber)
16. Physics and Astronomy (amber)
17. Agricultural and Biological Sciences (amber)
18. Chemical Engineering (amber)

Belgium

1. Computer Science (green)
2. Medicine (green)
3. Engineering (green)
4. Mathematics (green)
5. Chemical Engineering (green)
6. Veterinary (green)
7. Environmental Science (green)
8. Immunology and Microbiology (green)
9. Pharmacology, Toxicology and Pharmaceutics (amber)
10. Biochemistry, Genetics and Molecular Biology (amber)
11. Materials Science (amber)
12. Psychology (amber)
13. Neuroscience (amber)
14. Agricultural and Biological Sciences (amber)
15. Chemistry (amber)
16. Earth and Planetary Sciences (amber)
17. Physics and Astronomy (amber)
18. Energy (amber)

Norway

1. Veterinary (green)
2. Medicine (green)
3. Environmental Science (green)
4. Neuroscience (green)
5. Pharmacology, Toxicology and Pharmaceutics (amber)
6. Physics and Astronomy (amber)
7. Agricultural and Biological Sciences (amber)
8. Immunology and Microbiology (amber)
9. Engineering (amber)
10. Biochemistry, Genetics and Molecular Biology (amber)
11. Materials Science (amber)
12. Psychology (red)
13. Mathematics (amber)
14. Chemical Engineering (amber)
15. Earth and Planetary Sciences (amber)
16. Energy (amber)
17. Chemistry (amber)

18. Computer Science (red)

Germany

1. Earth and Planetary Sciences (green)
2. Physics and Astronomy (green)
3. Immunology and Microbiology (green)
4. Biochemistry, Genetics and Molecular Biology (green)
5. Mathematics (green)
6. Materials Science (green)
7. Chemistry (amber)
8. Psychology (amber)
9. Neuroscience (amber)
10. Medicine (amber)
11. Agricultural and Biological Sciences (amber)
12. Pharmacology, Toxicology and Pharmaceutics (amber)
13. Chemical Engineering (amber)
14. Energy (amber)
15. Computer Science (amber)
16. Environmental Science (amber)
17. Engineering (amber)
18. Veterinary (red)

Australia

1. Veterinary (green)
2. Energy (green)
3. Engineering (green)
4. Earth and Planetary Sciences (green)
5. Medicine (green)
6. Immunology and Microbiology (amber)
7. Materials Science (amber)
8. Environmental Science (amber)
9. Psychology (red)
10. Chemical Engineering (amber)
11. Mathematics (amber)
12. Computer Science (amber)
13. Physics and Astronomy (amber)
14. Chemistry (amber)
15. Agricultural and Biological Sciences (amber)
16. Biochemistry, Genetics and Molecular Biology (amber)
17. Pharmacology, Toxicology and Pharmaceutics (amber)
18. Neuroscience (red)

France

1. Veterinary (green)
2. Chemical Engineering (green)
3. Earth and Planetary Sciences (green)
4. Energy (amber)
5. Engineering (amber)
6. Environmental Science (amber)
7. Materials Science (amber)
8. Immunology and Microbiology (amber)
9. Biochemistry, Genetics and Molecular Biology (amber)
10. Pharmacology, Toxicology and Pharmaceutics (amber)
11. Mathematics (amber)
12. Medicine (amber)
13. Physics and Astronomy (amber)
14. Agricultural and Biological Sciences (amber)
15. Neuroscience (amber)
16. Chemistry (amber)
17. Computer Science (amber)
18. Psychology (red)

Austria

1. Physics and Astronomy (green)
2. Neuroscience (green)
3. Immunology and Microbiology (green)
4. Medicine (green)
5. Materials Science (amber)
6. Biochemistry, Genetics and Molecular Biology (amber)
7. Pharmacology, Toxicology and Pharmaceutics (amber)
8. Agricultural and Biological Sciences (amber)
9. Chemistry (amber)
10. Environmental Science (amber)
11. Mathematics (amber)
12. Psychology (red)
13. Computer Science (amber)
14. Energy (amber)
15. Chemical Engineering (amber)
16. Engineering (amber)
17. Veterinary (red)
18. Earth and Planetary Sciences (amber)

Ireland

1. Energy (green)
2. Veterinary (green)
3. Immunology and Microbiology (amber)
4. Materials Science (amber)
5. Chemical Engineering (amber)
6. Pharmacology, Toxicology and Pharmaceutics (amber)
7. Medicine (amber)
8. Chemistry (amber)
9. Agricultural and Biological Sciences (amber)
10. Neuroscience (red)
11. Engineering (amber)
12. Earth and Planetary Sciences (amber)
13. Biochemistry, Genetics and Molecular Biology (red)
14. Environmental Science (amber)
15. Psychology (red)
16. Physics and Astronomy (red)
17. Computer Science (red)
18. Mathematics (red)

Philippines

1. Medicine (amber)
2. Environmental Science (amber)
3. Earth and Planetary Sciences (amber)
4. Agricultural and Biological Sciences (amber)
5. Biochemistry, Genetics and Molecular Biology (red)
6. Psychology (red)
7. Neuroscience (red)

8. Chemical Engineering (amber)
9. Veterinary (red)
10. Pharmacology, Toxicology and Pharmaceutics (red)
11. Energy (amber)
12. Engineering (red)
13. Immunology and Microbiology (red)
14. Chemistry (red)
15. Materials Science (red)
16. Mathematics (red)
17. Computer Science (red)
18. Physics and Astronomy (red)

Japan

1. Energy (amber)
2. Chemical Engineering (amber)
3. Chemistry (amber)
4. Materials Science (amber)
5. Veterinary (amber)
6. Immunology and Microbiology (red)
7. Biochemistry, Genetics and Molecular Biology (red)
8. Physics and Astronomy (amber)
9. Earth and Planetary Sciences (amber)
10. Pharmacology, Toxicology and Pharmaceutics (amber)
11. Medicine (red)
12. Mathematics (red)
13. Neuroscience (red)
14. Environmental Science (red)
15. Psychology (red)
16. Agricultural and Biological Sciences (red)
17. Engineering (red)
18. Computer Science (red)

Singapore

1. Veterinary (green)
2. Energy (green)
3. Engineering (green)
4. Chemical Engineering (green)
5. Materials Science (green)
6. Computer Science (amber)
7. Mathematics (amber)
8. Pharmacology, Toxicology and Pharmaceutics (amber)
9. Chemistry (amber)
10. Agricultural and Biological Sciences (amber)
11. Environmental Science (amber)
12. Biochemistry, Genetics and Molecular Biology (red)
13. Medicine (red)
14. Immunology and Microbiology (red)
15. Physics and Astronomy (red)
16. Psychology (red)
17. Neuroscience (red)
18. Earth and Planetary Sciences (red)

Indonesia

1. Veterinary (green)
2. Environmental Science (amber)
3. Medicine (red)
4. Immunology and Microbiology (red)
5. Earth and Planetary Sciences (red)
6. Psychology (red)
7. Chemistry (red)
8. Agricultural and Biological Sciences (red)
9. Pharmacology, Toxicology and Pharmaceutics (red)
10. Chemical Engineering (red)
11. Energy (red)
12. Physics and Astronomy (red)
13. Materials Science (red)
14. Biochemistry, Genetics and Molecular Biology (red)
15. Mathematics (red)
16. Engineering (red)
17. Neuroscience (red)
18. Computer Science (red)

Vietnam

1. Psychology (green)
2. Medicine (amber)
3. Veterinary (amber)
4. Immunology and Microbiology (red)
5. Neuroscience (red)
6. Environmental Science (red)
7. Earth and Planetary Sciences (red)
8. Mathematics (red)
9. Pharmacology, Toxicology and Pharmaceutics (red)
10. Physics and Astronomy (red)
11. Agricultural and Biological Sciences (red)
12. Materials Science (red)
13. Chemistry (red)
14. Biochemistry, Genetics and Molecular Biology (red)
15. Chemical Engineering (red)
16. Engineering (red)
17. Energy (red)
18. Computer Science (red)

Thailand

1. Psychology (red)
2. Energy (amber)
3. Veterinary (red)
4. Chemical Engineering (amber)
5. Immunology and Microbiology (red)
6. Pharmacology, Toxicology and Pharmaceutics (red)
7. Medicine (red)
8. Environmental Science (red)
9. Materials Science (red)
10. Engineering (red)
11. Earth and Planetary Sciences (red)
12. Chemistry (red)
13. Agricultural and Biological Sciences (red)
14. Biochemistry, Genetics and Molecular Biology (red)
15. Neuroscience (red)
16. Mathematics (red)

17. Physics and Astronomy (red)
18. Computer Science (red)

South Korea

1. Energy (amber)
2. Materials Science (amber)
3. Engineering (amber)
4. Psychology (red)
5. Chemical Engineering (amber)
6. Veterinary (red)
7. Chemistry (red)
8. Physics and Astronomy (red)
9. Pharmacology, Toxicology and Pharmaceutics (red)
10. Environmental Science (red)
11. Computer Science (red)
12. Earth and Planetary Sciences (red)
13. Mathematics (red)
14. Agricultural and Biological Sciences (red)
15. Medicine (red)
16. Neuroscience (red)
17. Biochemistry, Genetics and Molecular Biology (red)
18. Immunology and Microbiology (red)

India

1. Energy (amber)
2. Chemical Engineering (amber)
3. Mathematics (red)
4. Materials Science (red)
5. Engineering (red)
6. Psychology (red)
7. Physics and Astronomy (red)
8. Computer Science (red)
9. Chemistry (red)
10. Pharmacology, Toxicology and Pharmaceutics (red)
11. Earth and Planetary Sciences (red)
12. Immunology and Microbiology (red)
13. Biochemistry, Genetics and Molecular Biology (red)
14. Environmental Science (red)
15. Agricultural and Biological Sciences (red)
16. Neuroscience (red)
17. Medicine (red)
18. Veterinary (red)

Malaysia

1. Veterinary (red)
2. Energy (red)
3. Chemical Engineering (red)
4. Environmental Science (red)
5. Materials Science (red)
6. Agricultural and Biological Sciences (red)
7. Pharmacology, Toxicology and Pharmaceutics (red)
8. Immunology and Microbiology (red)
9. Earth and Planetary Sciences (red)
10. Chemistry (red)
11. Engineering (red)
12. Medicine (red)
13. Mathematics (red)
14. Neuroscience (red)
15. Biochemistry, Genetics and Molecular Biology (red)
16. Physics and Astronomy (red)
17. Computer Science (red)
18. Psychology (red)

China

1. Veterinary (red)
2. Psychology (red)
3. Materials Science (red)
4. Chemistry (red)
5. Mathematics (red)
6. Chemical Engineering (red)
7. Neuroscience (red)
8. Physics and Astronomy (red)
9. Energy (red)
10. Environmental Science (red)
11. Pharmacology, Toxicology and Pharmaceutics (red)
12. Agricultural and Biological Sciences (red)
13. Engineering (red)
14. Immunology and Microbiology (red)
15. Biochemistry, Genetics and Molecular Biology (red)
16. Earth and Planetary Sciences (red)
17. Medicine (red)
18. Computer Science (red)

Figure 4: Australian performance across fields and sub-fields of science

Within each field, sub-fields are listed in descending order, by citation rate relative to the European average citation rate in the same sub-field. Sub-field #1 corresponds to the leftmost bubble in the field's chart. Green sub-fields indicate an Australian citation rate in that sub-field above the European average; amber between the European and world averages; and red below the world average.

Agricultural and Biological Sciences

1. Forestry (green)
2. Food Science (amber)
3. Aquatic Science (amber)
4. Agronomy and Crop Science (amber)
5. Animal Science and Zoology (amber)
6. Horticulture (amber)
7. Soil Science (amber)
8. Ecology, Evolution, Behavior and Systematics (amber)
9. Plant Science (amber)
10. Insect Science (amber)

Biochemistry, Genetics and Molecular Biology

1. Aging (green)
2. Endocrinology (green)
3. Clinical Biochemistry (amber)
4. Biochemistry (amber)
5. Cancer Research (amber)
6. Biotechnology (amber)
7. Molecular Medicine (amber)
8. Molecular Biology (red)
9. Developmental Biology (red)
10. Physiology (red)
11. Genetics (red)
12. Cell Biology (red)
13. Biophysics (red)
14. Structural Biology (red)

Chemical Engineering

1. Chemical Health and Safety (green)
2. Colloid and Surface Chemistry (green)
3. Filtration and Separation (amber)
4. Fluid Flow and Transfer Processes (amber)
5. Process Chemistry and Technology (amber)
6. Catalysis (red)
7. Bioengineering (amber)

Chemistry

1. Physical and Theoretical Chemistry (green)
2. Inorganic Chemistry (green)
3. Organic Chemistry (amber)
4. Analytical Chemistry (amber)
5. Spectroscopy (amber)
6. Electrochemistry (amber)

Computer Science

1. Signal Processing (green)
2. Hardware and Architecture (green)
3. Information Systems (amber)
4. Computer Networks and Communications (amber)
5. Computational Theory and Mathematics (amber)
6. Software (amber)
7. Computer Vision and Pattern Recognition (red)
8. Human-Computer Interaction (red)
9. Computer Graphics and Computer-Aided Design (red)
10. Artificial Intelligence (amber)
11. Computer Science Applications (amber)

Earth and Planetary Sciences

1. Geology (green)
2. Economic Geology (green)
3. Geotechnical Engineering and Engineering Geology (green)
4. Space and Planetary Science (green)
5. Stratigraphy (green)
6. Geophysics (green)
7. Atmospheric Science (green)
8. Geochemistry and Petrology (green)
9. Earth-Surface Processes (amber)
10. Oceanography (amber)
11. Paleontology (red)
12. Computers in Earth Sciences (red)

Energy

1. Nuclear Energy and Engineering (green)
2. Fuel Technology (green)
3. Energy Engineering and Power Technology (amber)
4. Renewable Energy, Sustainability and the Environment (amber)

Engineering

1. Aerospace Engineering (green)
2. Architecture (green)
3. Building and Construction (green)
4. Automotive Engineering (green)
5. Ocean Engineering (green)
6. Electrical and Electronic Engineering (green)
7. Civil and Structural Engineering (green)
8. Industrial and Manufacturing Engineering (green)
9. Control and Systems Engineering (green)

10. Computational Mechanics (green)
11. Mechanical Engineering (amber)
12. Safety, Risk, Reliability and Quality (amber)
13. Mechanics of Materials (amber)
14. Media Technology (amber)
15. Biomedical Engineering (amber)

Environmental Science

1. Water Science and Technology (green)
2. Ecological Modeling (green)
3. Nature and Landscape Conservation (green)
4. Global and Planetary Change (amber)
5. Ecology (amber)
6. Health, Toxicology and Mutagenesis (amber)
7. Environmental Chemistry (amber)
8. Pollution (amber)
9. Environmental Engineering (amber)
10. Waste Management and Disposal (amber)
11. Management, Monitoring, Policy and Law (red)

Immunology and Microbiology

1. Parasitology (green)
2. Immunology (green)
3. Microbiology (amber)
4. Applied Microbiology and Biotechnology (amber)
5. Virology (amber)

Materials Science

1. Polymers and Plastics (green)
2. Metals and Alloys (green)
3. Materials Chemistry (green)
4. Surfaces, Coatings and Films (amber)
5. Biomaterials (red)
6. Electronic, Optical and Magnetic Materials (amber)
7. Ceramics and Composites (amber)

Mathematics

1. Numerical Analysis (green)
2. Theoretical Computer Science (green)
3. Logic (green)
4. Control and Optimization (green)
5. Algebra and Number Theory (green)
6. Statistics and Probability (amber)
7. Applied Mathematics (amber)
8. Analysis (amber)
9. Mathematical Physics (amber)
10. Computational Mathematics (amber)
11. Discrete Mathematics and Combinatorics (red)
12. Modeling and Simulation (amber)
13. Geometry and Topology (red)

Medicine

1. Reviews and References (medical) (green)
2. Geriatrics and Gerontology (green)
3. Gastroenterology (green)
4. Emergency Medicine (green)
5. Biochemistry (medical) (green)
6. Otorhinolaryngology (green)
7. Transplantation (green)
8. Orthopedics and Sports Medicine (green)
9. Surgery (green)
10. Pediatrics, Perinatology and Child Health (green)
11. Obstetrics and Gynecology (green)
12. Anesthesiology and Pain Medicine (green)
13. Immunology and Allergy (green)
14. Ophthalmology (green)
15. Endocrinology, Diabetes and Metabolism (green)
16. Rehabilitation (green)
17. Reproductive Medicine (green)
18. Nephrology (green)
19. Dermatology (green)
20. Urology (green)
21. Rheumatology (green)
22. Internal Medicine (green)
23. Microbiology (medical) (green)
24. Infectious Diseases (green)
25. Hematology (green)
26. Neurology (clinical) (green)
27. Psychiatry and Mental Health (green)
28. Pulmonary and Respiratory Medicine (amber)
29. Embryology (amber)
30. Critical Care and Intensive Care Medicine (amber)
31. Cardiology and Cardiovascular Medicine (amber)
32. Oncology (amber)
33. Public Health, Environmental and Occupational Health (amber)
34. Pharmacology (medical) (amber)
35. Hepatology (amber)
36. Genetics (clinical) (amber)
37. Histology (amber)
38. Health Policy (red)
39. Complementary and Alternative Medicine (amber)
40. Physiology (medical) (red)
41. Health Informatics (amber)
42. Epidemiology (red)
43. Pathology and Forensic Medicine (red)
44. Radiology, Nuclear Medicine and Imaging (red)
45. Anatomy (amber)
46. Drug Guides (red)
47. Family Practice (red)

Neuroscience

1. Sensory Systems (green)
2. Biological Psychiatry (red)
3. Behavioral Neuroscience (red)
4. Neurology (red)
5. Cellular and Molecular Neuroscience (red)
6. Developmental Neuroscience (red)
7. Cognitive Neuroscience (red)

8. Endocrine and Autonomic Systems (red)

Pharmacology, Toxicology and Pharmaceutics

1. Toxicology (amber)
2. Drug Discovery (amber)
3. Pharmaceutical Science (amber)
4. Pharmacology (amber)

Physics and Astronomy

1. Astronomy and Astrophysics (green)
2. Radiation (green)
3. Statistical and Nonlinear Physics (amber)
4. Instrumentation (amber)
5. Surfaces and Interfaces (amber)
6. Atomic and Molecular Physics, and Optics (amber)
7. Nuclear and High Energy Physics (amber)
8. Acoustics and Ultrasonics (amber)
9. Condensed Matter Physics (amber)

Psychology

1. Applied Psychology (green)
2. Clinical Psychology (green)
3. Developmental and Educational Psychology (green)
4. Social Psychology (amber)
5. Neuropsychology and Physiological Psychology (amber)
6. Experimental and Cognitive Psychology (red)

Veterinary

1. Equine (green)
2. Small Animals (green)
3. Food Animals (green)