JETRO

An Introduction to Australia's Universities & Research Capabilities
オーストラリアの大学と研究・調査能力について

March 2024 / 2024年3月 ジェトロシドニー事務所

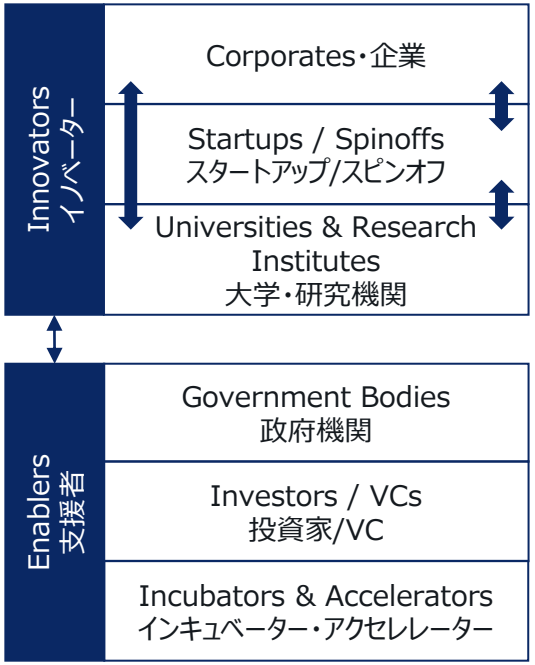
Supported by:
IGPI 経営共創基盤 Industrial Growth Platform, Inc.

Contents
目次

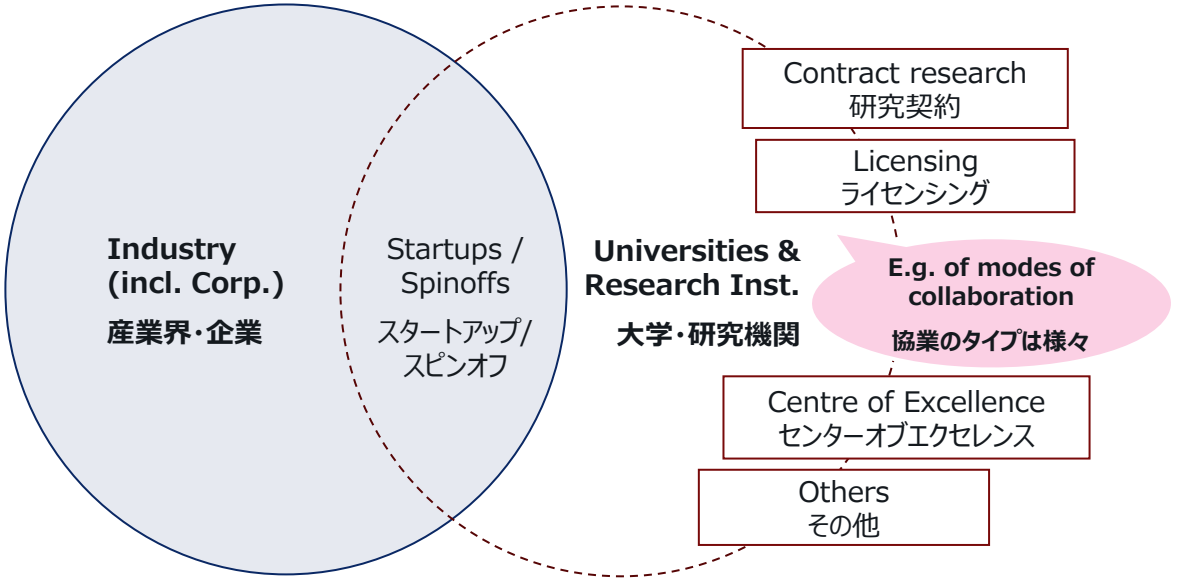
はじめに
本レポートは、オーストラリアの大学や研究機関について、その研究・調査能力や商業化の事例等をを紹介するものである。
日豪間でのオープンイノベーション・協業/連携を目指す企業、大学、研究機関、スタートアップ等の皆様にとって参考となれば幸いである。

Univ. & Research Institutes are vital participants of Australian innovation ecosystem
大学と研究機関はオーストラリアのエコシステムにおいて特に重要なプレーヤー

Ecosystem players・エコシステムのプレーヤー



Looking beyond startups・スタートアップだけではなく、大学等との協業も選択肢の一つ



Australian universities are highly ranked globally and have a strong focus on R&D
オーストラリアの大学は世界ランキングでもトップクラス、かつ調査・研究開発に熱心

Australian university snapshot・オーストラリアの大学の概要、日本との比較

42

Number of universities in Australia オーストラリアの大学数は42校
- 42 total; 37 public, 3 private, 2 international 42校; 37の国公立大学、3つの私立大学、2つの国際大学
- Japan has ~780・日本はおよそ780校（国公立、私立）

0.61%

% of GDP on R&D (HERD)*
研究開発費のGDP割合は日本よりもオーストラリアが高い (大学部門 / HERD)*

ERD = Expenditure on R&D

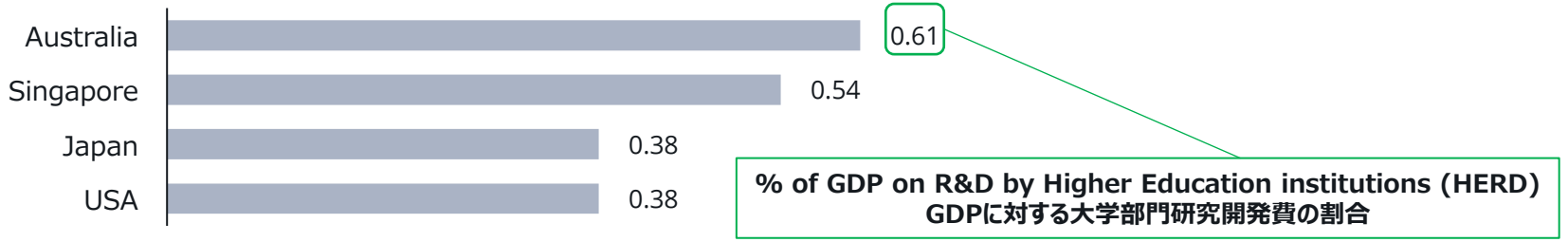


Fig: R&D expenditure (HERD; 2020)

* Gross domestic expenditure on research and experimental development (GERD) = Public sector (GOVERD + HERD + PNPERD) + Business (BERD)
* 総研究開発費 (GERD)には大きくわけて公的(GOVERD, PNPERD)、企業 (BERD)、大学部門 (HERD)が存在します。
Source: Study Australia, OECD, Top Universities, QS World University Ranking, Insee

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Global recognition・世界的認知度

6 vs 2

オーストラリアの大学は世界ランキングでも高順位

- 2024 QSランキング（英国の大学評価機関が出しているランキング、世界の約1500大学をランク付け）*において、６校がトップ50にランクイン。

Australian universities are highly ranked globally across various rankings

- Based on the QS rankings (2024)*, 6 Australian universities made it into the top 50.

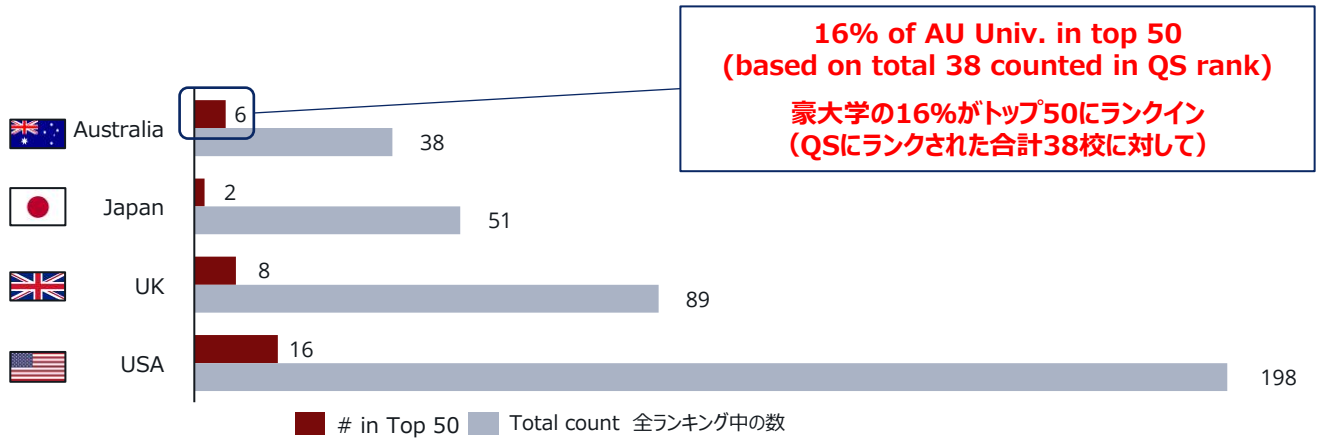

Fig: QS World Rankings

* The QS World University Rankings is a global ranking of around 1,500 universities released annually by a UK higher education analytics firm.
QS rankings of 2024 are based upon factors such as (1) Academic reputation , (2) Citations per faculty, (3) International research network, sustainability etc.
* QSランキングは英機関Higher Education Analytics Firmが出している、世界約1500大学のランキング。
2024版から新たに(1) Academic reputation , (2) Citations per faculty, (3) International research network, sustainability etc.の項目を追加。
Source: Study Australia, OECD, Top Universities, QS World University Ranking, Insee

Many Australian univs. are part of univ. groups; operate across diverse focus areas
オーストラリアの大学はグループに所属していることも多く、また幅広い分野に精通している

University groupings* ・ 大学のグルーピング*

4 major groups of universities, with unique characteristics
主に４つの大学グループ*があり、それぞれに特色がある

Group of Eight (Go8)

Group with long history
主要大学の伝統的グループ

1. Australian National Univ. (ANU)
2. Monash Univ.
3. The Univ. of Adelaide
4. The Univ. of Melbourne
5. The Univ. of Queensland
6. The Univ. of Sydney
7. The Univ. of Western Australia
8. UNSW Sydney

Australian technology Network (ATN)

Technology focused
主に技術に特化した大学群

1. Curtin Univ.
2. Deakin Univ.
3. RMIT Univ.
4. The Univ. of Newcastle
5. The Univ. of South Australia
6. Univ. of Technology Sydney (UTS)

Innovative Research Universities (IRU)

Young and community focus
若手群でコミュニティを重視

1. Flinders Univ.
2. Griffith Univ.
3. James Cook Univ.
4. Latrobe Univ.
5. Murdoch Univ.
6. Univ. of Canberra
7. Western Sydney Univ.

Regional Universities Network (RUN)

Regional development
地方活性に重点

1. Charles Sturt Univ.
2. CQ Univ. Australia
3. Federation Univ.
4. Southern Cross Univ.
5. Univ. of New England
6. Univ. of Southern Queensland
7. Univ. of Sunshine Coast

* There are universities who are not part of groups (e.g. Macquarie Univ., QUT, etc.)
* グループに属さない大学も複数存在します。（例: Macquarie Univ、QUT、その他）
Source: Go8, ATN, IRU, RUN, Australian universities individual websites

Many Australian univs. are part of univ. groups; operate across diverse focus areas
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Major Strengths* ・主な強み*

Variety of strengths that can be explored for collaboration. Please see the Appendix for details of each university.
有益かつ協業チャンスのある様々な分野に強みを持っている。各大学の強みについては、巻末の付属資料を参照。

Advanced Tech.・先進技術

1. AI & Machine learning
2. Cyber security
3. Autonomous tech
4. Nanotechnology
5. Quantum
6. …

Environment・環境関連

1. Energy (hydrogen, battery, etc.)
2. Circular economy (e.g. Water, waste etc.)
3. Chemicals, materials, etc.
4. …

Health Science・ヘルス関連

1. Medical devices
2. Clinical trials
3. Neuroscience
4. Biomedical
5. …

Others・その他

1. Space and astronomical studies
2. Agriculture and food
3. defense and security
4. …

Note: Above are aggregated and selected examples only 上記はまとめられた一例に限ります

* Strengths are aggregated as of Mar 2024 – for further details, highly recommended to discuss with individual universities
* 主な強みは2024年3月時点の調査をまとめたものであり、詳細についてはそれぞれの大学に個別で相談することをお勧めします。
Source: Go8, ATN, IRU, RUN, Australian universities individual websites

JP companies are collaborating with Australian universities
日本企業による、大学との連携事例

Examples across diverse themes・多様なテーマでの事例

Carbon Neutral・カーボンニュートラル

Nippon Steel

x

The University of Queensland

Production of valuable chemicals from CO_2 using Microorganisms
微生物を利用してCO_2から基礎化学品を製造

2022

Artificial Intelligence・AI 人工知能

Fujitsu

x

Macquarie University

AI Research Lab for promising applications of AI
AI活用のための産学連携拠点の設置

2023

Smart City・スマートシティ

NEC

x

University of Wollongong Australia

Innovative smart city projects in multiple areas (e.g. Sustainability)
複数の場所にてスマートシティプロジェクトの実施

2023

Data Security・データセキュリティ

NTT Data

x

UTS

Enhancing data security for research and use-case development
属性ベース暗号技術を活用したソリューションの商用活用

2023

Note: The above are examples only.
上記は一例です。
Source: Nippon Steel, NEC, Fujitsu, NTT Data's websites

Research institutes in Australia – alignment with the focus areas of Japan
オーストラリアにおける研究・調査機関 – 取り組み分野は日本の社会課題と重なる

AU Research Institutes・オーストラリアの研究機関

Australia has a diverse range of world recognised research organisations; who contribute to mission-led and long-term research for Australia and the world.

オーストラリアでは世界的に優秀な研究機関が多数存在しており、オーストラリアや世界における課題解決に向けた長期的な研究を行っている。

1. Main types of Research Institutes・主な研究機関の種類

Private
民間

E.g.
- Baker Heart and Diabetes Institute
- Epworth Research Institute
- … etc.

University derived
大学発祥

E.g.
- Sydney Institute of Agriculture
- National Computational Infrastructure
- … etc.

Government supported
政府関連

E.g.
- CSIRO
- Australian Institute of Marine Science
- … etc.

2. Research priorities in Australia・オーストラリアにおける主な研究・調査分野:

- Food・食料
- Soil and Water・土壌と水
- Transport・交通、輸送関連
- Cybersecurity・サイバーセキュリティ
- Energy・エネルギー
- Resources・資源
- Advanced Manufacturing・先端技術製造
- Environmental Change・気候変動、環境変化
- Health・健康医療

Australia is home to prominent research institutes
オーストラリアにおける有力な研究・調査機関

CSIRO overview・CSIROとは

Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a key research body in Australia
オーストラリア連邦科学産業研究機構 (CSIRO)は、オーストラリアの重要な総合研究機関

- National science agency established in 1916
- Can be considered as an equivalent to the likes of AIST
- 49 sites in Australia; 3 sites outside Australia
- 6,300+ people
- Over 4,000 industry and government partners
- Annual Budget ： ~ A$ 1.6 Billion
  (For reference :
  AIST Annual expenditure:~ A$ 1.1Billion *(FY22))

- 1916年に設立されたオーストラリアの連邦研究機関
- CSIROは日本でいうAIST（産業技術総合研究所）等に相当する組織
- オーストラリア内に49拠点、海外に3拠点を持つ
- スタッフは6,300人以上
- 4,000以上の企業・産業、政府機関と協業している
- CSIROの年間予算: ~ 16億豪ドル
  （参考：AISTの年間支出:~11億豪ドル *（2022年度））

CSIRO's areas of focus・主な取り組みテーマ

CSIRO clusters their diverse research into 9 areas, which have further detailed subcategories
CSIROでは大きく9つの項目に分けて研究・調査を行っている; またこの9つの項目ははサブカテゴリーでより細かく分類されている

Natural environments 自然環境
Technology and space テクノロジーと宇宙
Production 生産
Health and medical 健康と医療
Disasters 災害
Environmental impacts 環境への影響
Animals 生物
Plants 植物
Indigenous science 先住民に関する科学

* RBA Exchange rate at $1 AUD = ¥97 JPY as of 01/03/24
* オーストラリア準備銀行の2024年3月1日為替$1 AUD = ¥97 JPY による計算。
Source: CSIRO, Australian Research Council, AIST, Australian Embassy

CSIRO has been collaborating with Japan for decades
CSIROと日本は、何十年にも及ぶ協業実績を誇る

CSIRO's x Japan・CSIROと日本

CSIRO has worked with Japan from the mid 1980s

CSIROの日本との関わりは古く、80年代の中盤から連携事例がある。

Government 政府	• AIST • NEDO • NARO	• Japan Space Systems • J-COAL • JAMSTEC
Industry 産業・企業	• Furukawa Battery • Hochiki Corp. • Idemitsu Kosan	• Mitsubishi Heavy Ind. • Sumitomo Corp. • Kawasaki Heavy Ind.
Universities 大学	• Keio Univ. • Kobe Univ. • Kyoto Univ.	• Nagoya Univ. • Tohoku Univ. • Tokyo Univ.

Notable Collaboration topics (examples)・主な協業分野の一例:

Hydrogen, Solar, batteries, CCU, industrial science, others　　水素、太陽光発電、バッテリー、二酸化炭素回収・貯留、工業、その他

Note: Above are selected examples of collaboration partners and topics with Japan
上記は協業歴のある日本企業・法人、分野の一例です。
Source: CSIRO

Australian univs. engage with corporates in diverse ways
オーストラリアの大学における、産学連携・商業化の方法について

Research relationships・研究における産学連携例

There are many engagement methods

連携形態は様々

Contract Research・研究契約

Research requests (e.g. outsource or joint, etc.)

研究を依頼し契約するもの（例：委託研究、共同研究等）

Centre of Excellence・センターオブエクセレンス

Deeper commercial and technical collaboration based on a focus area

特定分野に特化した、より深い共同研究形態

Engagement levels will vary from transactional to strategical

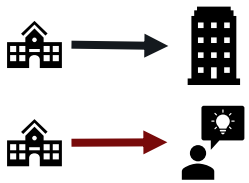
単発のものから戦略的なものまで様々なパターンがある。

Commercialisation・商業化の方法

Utilisation of IP is a common commercialisation form

知的財産（IP）を活用した商業化が一般的といえる

Common forms of IP utilisation・IPの主な活用法の例



Licensing to companies

大学が持つ知的財産を企業へライセンシング

Create own Spinoff

大学が持つ知的財産を核としたスピンオフの起業

University can maintain ownership of IP, or

大学がIPを継続保有する場合もあれば、

Buyer takes over IP (univ. lose ownership)

大学がIPを売却する場合もある。

Australian univs. engage with corporates in diverse ways
オーストラリアの大学における、産学連携・商業化の方法について

JP companies' value-add・日本企業が付加できる価値は？

JP companies add value to the collaboration in diverse ways
日本企業がどのような付加価値を提供することができるか？が協業・連携のカギ

Every Japanese company may have its unique approach, but it is common to provide:

- Business support (e.g. overseas market expansion)
- Technical support (e.g. PoC, Trials, early support)
- Financial support (e.g. research funding, investments)

Value add depends on how the Japanese companies are envisioning the application of the research / IP for its business.

For example, collaborations with Japanese companies can expand those IP business to broader overseas markets by leveraging on their global footprint to create mutual value for both sides

日本企業のアプローチ方法として、比較的よくある例は:

- 事業のサポート (例: 海外展開等)
- 技術面での連携 (例: PoC、共同実験、研究初期からのサポート等)
- 資本面での連携 (例: 調査資金の提供、投資等)

日本企業がどのように研究成果（知的財産等）を活用したいか、という点も考慮する必要がある。

例えばグローバルに活動する日本企業が、大学側の持つ技術を活用する際に、オーストラリア以外での活用・展開まで広げられる場合、豪側にとってはメリットと言え、協業・連携のカギとなりうる。

Many AU univ. have dedicated departments that focus on industry collaborations
大学には、産学連携を推進するチームや専属部門がある

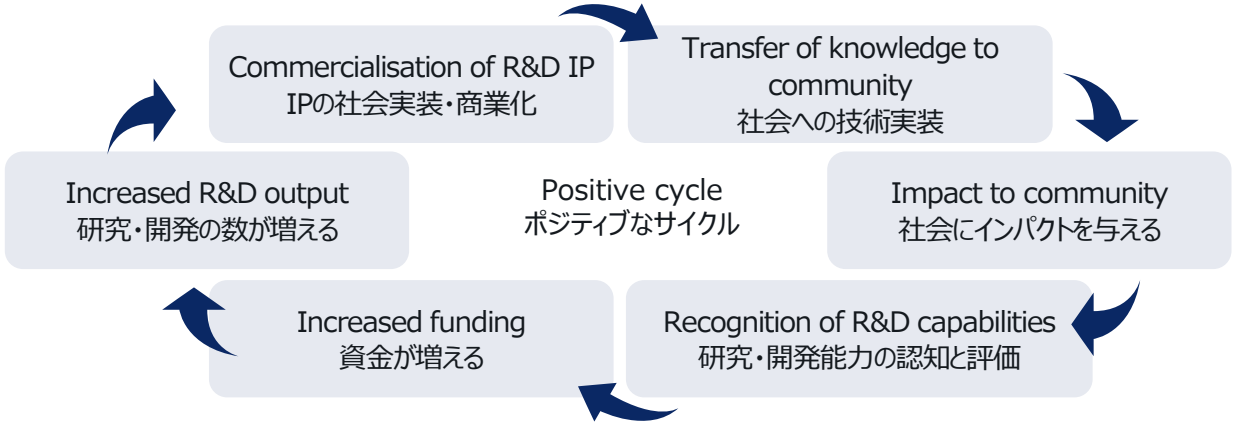
Technology Transfer Office (TTO)* ・技術移転機関について*

It is common for Australian univs. to have a dedicated department – i.e. a Technology Transfer Office* (TTO) which is responsible for their research related industry engagement and collaborations

大学内には協業、産学連携を行うために企業・産業とやり取りを行う専属チーム「技術移転機関」(TTO)を有していることが多い

TTO's role is to create a healthy R&D cycle for the university;
If universities are heavily tax funded, there is a responsibility to bring community benefits

TTOの役目は大学のために健全な研究・開発サイクルの構築にある;
また大学は大部分が税金で賄われている場合、社会への貢献が責務とされている



* TTO is a generic term and each university may have their own variant name (e.g. Industry Engagement Office etc.)
* TTOは総称であり、大学により呼び名は異なることがあります。
Source: Knowledge Commercialisation Australasia

Australian research have created numerous spinoffs across diverse focus areas
オーストラリアの研究・調査から幅広い分野でスピンオフ企業が生まれている

Prominent spinoffs・著名なスピンオフ

Examples of AU university / research institute spinoffs:
オーストラリアにおける大学・研究機関のスピンオフの一例:

Origin 出身大学・機関		Spinoff スピンオフ企業	Focus フォーカス	
UNSW	→	LAVO	Hydrogen storage tech.	水素吸蔵合金を用いた水素貯蔵技術
Curtin University	→	icetana	Video Surveillance system	AIを用いた映像監視システム
Australian National University (ANU)	→	Samsara Eco	Plastic recycling tech.	プラスチック素材のリサイクル技術
The University of Newcastle	→	MGA Thermal	Energy Storage system	熱エネルギー貯蔵システム
Monash University	→	4DMedical	4D x-ray imagine tech.	4次元X線イメージ技術
CSIRO	→	Hivery	Retail optimisation tech.	AIを用いたリテール最適化技術

Source: LAVO, icetana, Samsara Eco, MGA Thermal, 4DMedical, Hivery

Australian research have created numerous spinoffs across diverse focus areas
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Global success cases (with Japan angle)・成功事例 (日本関連)

2 x select success collaboration cases・スピンオフ企業と日本企業との連携成功例

icetana **Case 1: Global mindset from early days**
ケース1：グローバルな視野を早い段階から持ったSUが、日本企業と連携した事例

- From 2011 – 2016, expanded to 10 countries
- JP companies supporting further expansion beyond Japan or Australia
  E.g. Macnica → Japan and Brazil
  NEC Argentina → Argentina

- 2011 – 2016年の間に10ヵ国に進出
- 日本企業のサポートで日豪以外のマーケットへの進出も成功させている
  例：（株）マクニカと協業し、日本とブラジルで展開
  NECアルゼンチンと協業し、アルゼンチンで展開、等

Hivery **Case 2 Continuous industry engagement**
ケース2：日本法人を立ち上げ、日本企業と継続的に連携した事例

- Launched Hivery Japan in 2018
- Post a PoC with JR East, Hivery's solution runs on 6,000 vending machines in Japan

- 2018年に日本法人を設立
- JR東日本とPoCを行い、結果6,000台ものエキナカ自販機に技術導入

Source: icetana, Hivery

AU offers 'Cooperative Research Centres (CRCs)' that focus on addressing key social issues
CRCを通じて社会問題解決に取り組む方法もある

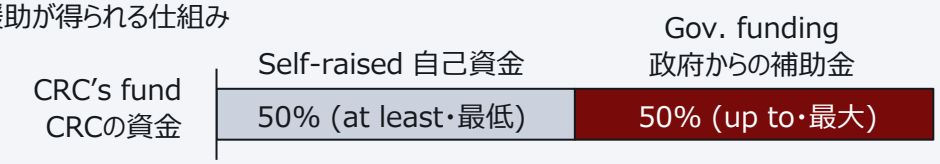
CRC overview* ・ CRCの全体像*

Australia has a unique academia, government and industry collaboration program – Cooperative Research Centres (CRC) .
オーストラリアには大学、政府、産業による産学協業・連携を目的としたCooperative Research Centres (CRC) という補助金プログラムがある

- AU Gov. initiative (DISR) since 1990; provides funding support for industry-led collaborations
- CRC is for groups that agreed to collaborate to addresses industry identified problems and key issues
- Shorter and smaller versions called CRC-P also exists

- 豪政府主導（産業科学資源省）で1990年から行われているもので、産業主導の共同研究活動に対して補助金を提供するもの。
- 産業界において広く課題認識されているような重要な社会問題へ、複数者で取り組む研究が対象。
- CRC-Pと呼ばれる、より短期間・小規模の仕組みも存在する

Number of partners パートナー数	No limit 特に制限なし
Length 期間	5~10 yrs. (CRC) or 3 yrs. (CRC-P) 5~10年（CRC）又は、3年（CRC-P）
How to apply 申請先・方法	Check the website of Business.gov.au （DISR）for details. Business.gov.au のウェブサイトにて詳細確認の上、申請。（産業科学資源省の所管）
Funding 資金	Self-raised + Gov. funding 自己資金 + 政府補助金のマッチング拠出が原則 • Must self-raise first まず自己資金を投入することが必須 (financial and/or in-kind・金銭的 and/or 現物) • Gov. to support with up to 50% of eligible grant project costs upon approval 承認後、政府から最大50%の援助が得られる仕組み



* For CRCs, please seek relevant professional advice before making any decisions. This presentation doesn't constitute professional advice.
* CRCについては専門家と協議し、各自でご判断ください;この資料は専門的アドバイスを促す目的に作成しておりません。
Source: Australian Govt., Cooperative Research, Food Agility CRC, HILT CRC, Offshore-Energy, JETRO

AU offers 'Cooperative Research Centres (CRCs)' that focus on addressing key social issues
CRCを通じて社会問題解決に取り組む方法もある

CRC x Japan・CRC x 日本

2 x examples of JP companies association with CRCs
CRCと連携する方法、および２つの日系企業事例

1. Being a CRC partner・CRCに参加する

"Food Agility CRC" ($50M grant)	➡	NTT, Yamaha Motor
"Heavy Industries Low-carbon Transition CRC" ($39M grant)	➡	Mitsubishi Heavy Industries

2. Work with CRC・CRCと連携する

"Future Energy Exports CRC" ($40M grant)	🤝	JX NOEX, MOL, Osaka Gas

Note: Above CRCs are selected examples only. CRCs are subject to several criteria and discretion of appropriate bodies.
上記はCRCの一例であり、CRCはそれぞれの機関により詳細は異なります。
* For CRCs, please seek relevant professional advice before making any decisions. This presentation doesn't constitute professional advice.
* CRCについては専門家と協議し、各自でご判断ください;この資料は専門的アドバイスを促す目的に作成しておりません。
Source: Australian Govt., Cooperative Research, Food Agility CRC, HILT CRC, Offshore-Energy, JETRO,

AU offers potential tax incentives and grant funding that can add to its attractiveness
活用可能な補助制度

R&D Tax incentives* ・研究開発優遇税制の主な概要*

The Research and Development Tax Incentive (R&DTI) helps companies innovate and grow by offsetting some of the costs of eligible R&D
研究開発優遇税制は、企業による研究開発を促進するための税控除制度であり、各種要件を満たすことで活用できる

R&D Tax Incentive eligibility (examples) * 適用にあたっての諸条件（一例）*：

- You're an R&D entity if you are a corporation that is any of the following:
  - incorporated under an Australian law
  - incorporated under a foreign law but an Australian resident for income tax purposes
  - incorporated under a foreign law and you are both:
    - → a resident of a country with which Australia has a double tax agreement that includes a definition of 'permanent establishment'
    - → carrying on business in Australia through a permanent establishment as defined in the double tax agreement.
- To be eligible for a tax offset your notional deductions for an income year, must be at least $20,000.
- Eligible activities are either core R&D activities or supporting R&D activities as defined in the ITAA 1997.
- For eligible R&D expenditure exceeding $150 million in your income year, the tax offset is equal to your company tax rate.

- オーストラリアまたは海外の法律に基づいて設立された企業であること。
  （個人事業主等は対象外。また所得税制上の居住国、税務上の二国間条約に基づく諸規定等あり。）
- 対象となる研究開発活動（ITAA1997という法律にて詳細が規定されている）を行っており、その費用が2万豪ドル以上であること。
- 対象となる研究活動費用が1億5千万豪ドルを超えた場合、超えた分は通常の税率適用対象となる。

* Please note that in order to qualify for the R&D Tax incentives, a number of other requirements must be also be met on top of those mentioned above. Please seek relevant professional advice before making any decisions. This presentation doesn't constitute professional advice.
* 研究開発優遇税制が適用されるには上記のほか各種要件を満たす必要があります。専門家と協議し、各自でご判断ください;この資料は専門的アドバイスを促す目的に作成しておりません
Source: JETRO, Australian Government (Business.gov.au, Grants Connect), DFAT, State Governments (NSW, VIC, QLD, SA, WA), Australia-Japan Innovation Fund

AU offers potential tax incentives and grant funding that can add to its attractiveness
活用可能な補助制度

R&D Tax incentives* ・研究開発優遇税制の主な概要*

Turnover <$20M **年間売上高2,000万豪ドル未満**	For R&D entities with aggregated turnover of less than $20 million, the refundable R&D tax offset is your corporate tax rate plus an 18.5% premium. 「法人税率＋18.5%」（税控除率）＋現金での還付を申請することができる。
Turnover ≧$20M **年間売上高2,000万豪ドル以上**	All eligible R&D expenditure up to 2% R&D Intensity will receive a non-refundable R&D tax offset equal to your corporate tax rate plus 8.5% premium. 総費用に占めるR&D費用の割合０～2%までの場合「法人税率＋8.5%」が税控除率となる。
	Additional eligible R&D expenditure above 2% R&D Intensity will receive a non-refundable R&D tax offset of your corporate tax rate plus 16.5% premium. 総費用に占めるR&D費用の割合2%超の場合「法人税率＋16.5%」が税控除率となる。

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* 研究開発優遇税制が適用されるには上記のほか各種要件を満たす必要があります。専門家と協議し、各自でご判断ください;この資料は専門的アドバイスを促す目的に作成しておりません
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AU offers potential tax incentives and grant funding that can add to its attractiveness
活用可能な補助制度

Innovation related grants* ・イノベーション関連の補助金*

Grants and funding maybe available at Federal, state level or individual funding organisations (subject to suitability) It requires active monitoring on variety of sources for optimised access.

補助金は連邦政府か州政府、または独立した機関からも得ることができる (各種条件あり) 。
補助金情報にアクセスするには各機関のＨＰ等を頻繁にチェックすること。

Examples（例）

National・連邦単位

- Business.gov.au – Link
- Grants Connect – Link
- Australia-Japan Foundation・豪日交流金 – Link

State・州単位

- NSW Gov.・NSW州政府 – Link
- VIC Gov.・VIC州政府 – Link
- QLD Gov. ・QLD州政府 – Link
- SA Gov. ・SA州政府 – Link
- WA Gov. ・WA州政府 – Link

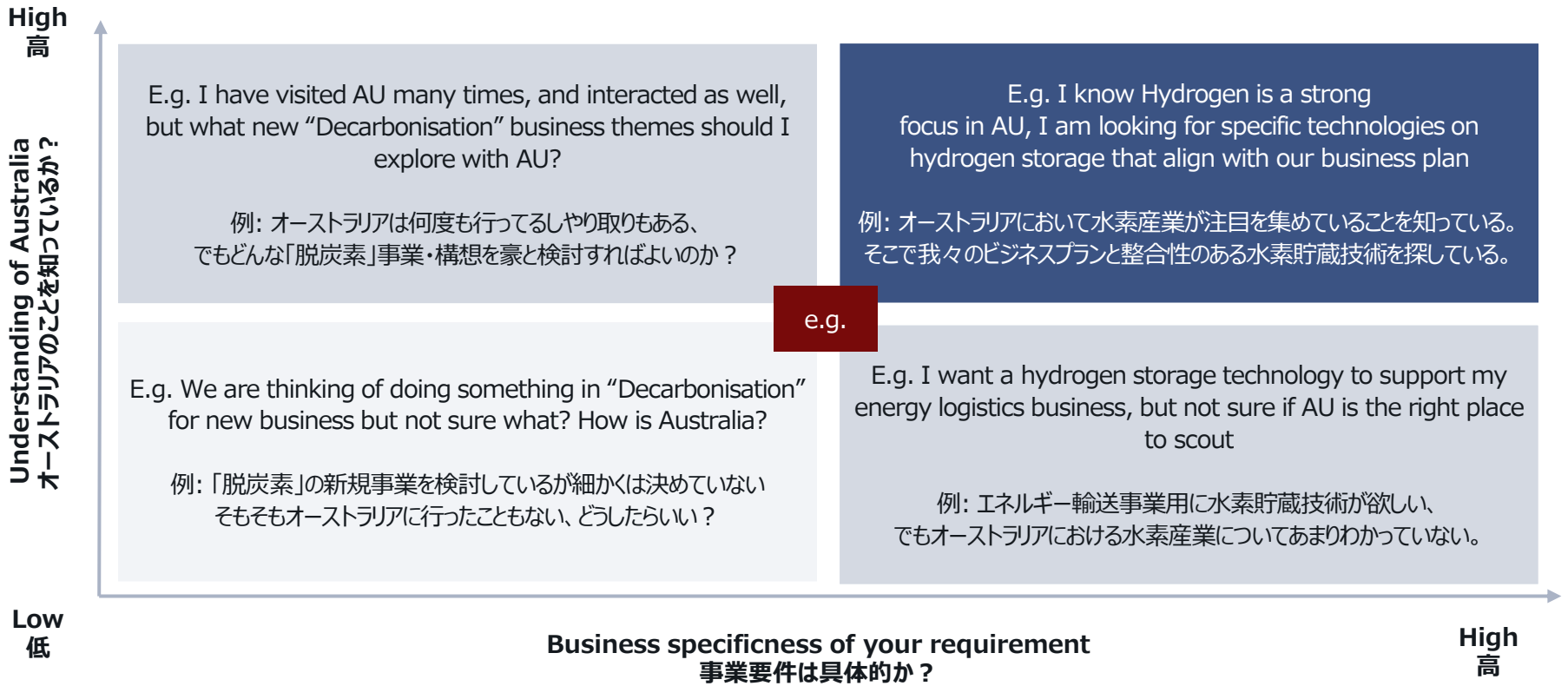
Others・その他

- Australia-Japan Innovation Fund – Link

* The above are examples only. Grants can be opened / closed and are subject to several criteria and discretion of appropriate bodies. For details, please contact respective bodies.
* 上記は一例です。補助金には受付と締め切りがあり、詳細は各制度と機関で扱いが異なります。詳しくは各補助金担当窓口へご連絡ください。
Source: JETRO, Australian Government (Business.gov.au, Grants Connect), DFAT, State Governments (NSW, VIC, QLD, SA, WA), Australia-Japan Innovation Fund

JP companies can have varying impressions of AU – reflecting on that is a good starting point
オーストラリアの印象は様々 – ニーズの整理・把握から始めることが望ましい

Starting point: Understanding your situation with regards to AU・まずは、出発点を知ること



Group of Eight (Go8)

University	Strength areas
Australian National University	1. **Health science** – diseases 2. **Environment and sustainability** – biodiversity, climate change, energy, resources 3. **Fundamental science** – earth, new materials, space 4. **Defence and security** – food security, secure networks 5. …
Monash University	1. **Health science** – cancer and blood diseases, cardiovascular diseases, stem cells and regenerative science, infection, neuroscience 2. **Environment and sustainability** – economics and sustainability 3. **Advanced technologies** – machine learning, human-centred computing, software engineering, vision and language, systems and data engineering, big data 4. **Fundamental science** – energy and materials, environmental change and adaptation, 5. **Defence and security** - cyber security 6. **Architecture** – expansive visions and technologies 7. **Engineering** – chemical and biological, civil, electrical and computer systems, materials science, mechanical and aerospace 8. …
The University of Adelaide	1. **Health science** – cancer, medical machine learning 2. **Environment and sustainability** – climate and biodiversity, marine and freshwater ecosystems, urban and regional landscapes, water quality, 3. **Advanced technologies** – machine learning, robotic vision, autonomous systems, surveillance and tracking, photogrammetry and 3D modelling 4. **Defence and security** – photonics and advanced sensing, machine learning and AI, Cyber security, defence communications and networking, graphene research, neurobotics, directed energy, applied electromagnetics, nanoscale bio photonics, sonar sensors 5. **Food and agricultural** – plant breeding 6. …

* Strengths are aggregated as of Mar 2024 – for further details, highly recommended to discuss with individual universities
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Source: Go8, ATN, IRU, RUN, Australian universities individual websites

Strength areas of Australian universities 各大学の強み

University	Strength areas
The University of Melbourne	1. **Health science** – cancer, immunology and infection, neuroscience, biochemistry and cell biology, microbiology, plant biology 2. **Environment and sustainability** – energy systems, geochemistry, atmospheric sciences, ecological applications, fisheries science, forestry science, precision agriculture and remote sensing, urban water infrastructure, energy minerals, sustainable processing, power generation and transport, heavy industry and resources, sustainable housing and planning, urban greening and climate adaptation, circular economy 3. **Advanced technologies** – connected and automated multimodal transport, public transport systems, freight systems and city logistics, computational transport science, modular construction, environment digital twins and simulation 4. **Fundamental science** – astronomical and space sciences, atomic, molecular, nuclear, plasma physics, optical physics, quantum physics, macromolecular and materials chemistry, medicinal and biomolecular chemistry, nanotechnology, organic chemistry, computational chemistry 5. **Defence and security** – AI, cyber security, maritime and aerospace systems, power and energy, quantum sensors, autonomous systems, network security 6. **Food and agricultural** – waste management, emerging and transformational food systems, agribusiness, agronomy and crop science, animal genetics and physiology, food science and safety, livestock production systems, plant genetics, sensing technologies, soil science, virology and parasitology 7. **Architecture** – urban design and planning 8. …
The University of QLD	1. **Health science** – cancer, clinical science and experimental medicine, medicinal and pharmaceutical science, genetics, human movement and sport science, immunology and infectious diseases, biological science, neuroscience, molecular and cellular bioscience, nanotechnology and bioengineering 2. **Environment and sustainability** – water management environmental engineering 3. **Advanced technologies** – information systems and data management 4. **Food and agricultural** – food science 5. **Engineering** – mining and minerals processing 6. …

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Strength areas of Australian universities 各大学の強み

University	Strength areas
The University of Sydney	1. **Health science** – medical biochemistry and metabolomics, cardiovascular medicine and haematology, clinical science, human movement and sports science, immunology, medical microbiology, neuroscience, oncology, microbiology, genetics, biochemistry and cell biology 2. **Environment and sustainability** – soil sciences, geochemistry 3. **Advanced technologies** – nanotechnology, distributed computing, AI and image processing 4. **Fundamental science** – astronomical and space sciences, atomic, molecular and plasma physics, biological, biomedical and medical physics, nanoscience, particle physics, photonics and optical science, quantum physics and information, macromolecular and materials chemistry, medicinal and biomolecular chemistry 5. **Food and agricultural** – agriculture, land and farm management, animal production 6. **Architecture** – urban and regional planning 7. **Engineering** – aerospace, autonomous systems and robotics, biomedical, digital science, manufacturing, materials mechanical, mechatronic 8. …
The University of Western Australia	1. **Health science** – biomedical and clinical science, cardiovascular medicine and haematology, immunology, medical microbiology, neuroscience, oncology, biological science, biochemistry and cell biology, genetics, plant biology 2. **Environment and sustainability** – geochemistry, oceanography, ecological applications, soil science 3. **Advanced technologies** – AI, image processing, computing science 4. **Fundamental science** – astronomical and space science, optical physics, quantum physics, medicinal and biomolecular chemistry 5. **Food and agricultural** – agriculture, land and farm management, crop and pasture production, fisheries science 6. …

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Strength areas of Australian universities 各大学の強み

University	Strength areas
UNSW	1. **Health science** – ageing, biomaterials, biomedical engineering, biotechnology, brain science, neuroscience, cancer, cardiovascular diseases, genomics, infectious diseases and immunology 2. **Environment and sustainability** – alternative energies and fuels, climate change, conservation biology and biodiversity, environmental modelling, marine biology and oceanography, microbial biofilms, sustainable materials and recycling, water use and re-use, water purification 3. **Advanced technologies** – advanced polymers and membranes, biomaterials, nanomaterials, quantum computing, silicon solar cells, space engineering, biomedical engineering and bionics, optical fibre communications, robotics and autonomous systems, satellite engineering and applications, software engineering, unmanned aerial vehicles 4. **Fundamental science** – astronomy, astrophysics, astrobiology, biology, bio science, space science and engineering 5. **Defence and security** – e-security, hypersonics 6. …

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Australian Technology Network of Universities (ATN)

University	Strength areas
Curtin University	1. **Health science** – cancer, clinical research, inflammation and infectious disease, neurodegenerative disorders, vascular and metabolic disorders, neurodiversity 1. **Environment and sustainability** – city transformations, sustainable buildings, sustainable consumption, biocement 2. **Advanced technologies** – hydrogen, energy transition, critical minerals, AI and machine learning, blockchain and financial applications, data science, data analytics 3. **Fundamental science** – radio astronomy, space, electrochemistry, nanotechnology 4. **Food and agricultural** – crop management and disease prevention, digital agriculture, eDNA and biomonitoring, food security, marine science, bioprocessing, soil and landscape science, sustainable water use 5. **Engineering** – corrosion, geoscience, mining, site restoration 6. …
Deakin University	1. **Health science** – biology of health and disease, chronic conditions, sustainable healthcare 2. **Environment and sustainability** – blue carbon, aquaculture, advanced modular bioprocessing, energy systems and data, integrated water management, ocean life 3. **Advanced technologies** – deep learning, AI, advanced alloy, electro and energy materials, fibres and textiles, carbon fibres and composites 4. **Defence and security** – cyber security 5. …
RMIT University	1. **Heath science** – chronic disease, biomedical engineering, cardiovascular biology, sports science, nutraceuticals, neuroscience, pharmaceutical science 2. **Environment and sustainability** – renewable energies, sustainable building materials, water purification, waste management 3. **Advanced technologies** – electronics, photonics and sensors, air and water purification, quantum technologies, software, AI, cyber security, computer vision, data science, distributed computing and system software, machine learning, cloud computing 4. **Fundamental science** – materials chemistry 5. **Engineering** – aerospace, civil and infrastructure, electrical and biomedical, electronic and telecommunications, mechatronics, mechanical and automotive 6. …

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Strength areas of Australian universities 各大学の強み

University	Strength areas
The University of Newcastle	1. **Health science** – VR for remote diagnosis on neurological conditions, brain neuromodulation, immune health, infection, precision medicine 2. **Environment and sustainability** – energy, advanced materials, organic electronics, plant science, water security, conservation science, environmental plastic, hydrogen, marine natural products 3. **Advanced technologies** – nanomaterials, fluid mechanics and turbulence, precision mechatronics, nanoscience, machine learning, robotics, telecommunication networks 4. **Fundamental science** – space physics 5. **Defence and security** – cyber security 6. **Food and agricultural** – food science 7. **Engineering** – geotechnical, materials, particle processing and transport 8. …
University of South Australia	1. **Health science** – precision health, cancer biology, cell biology, pharmaceutical 2. **Environment and sustainability** – infrastructure and resource management 3. **Advanced technologies** – virtual environments, biomedical, industrial AI, smart satellite 4. …
UTS	1. **Health science** – ageing and palliative care, cancer, medical devices, translational biotherapeutics, transcriptome research, chronic care, computational microbial biology, microbial ecology, microbial genomics, microbial morphology, volumetric imagine, microfluidic devices, micro and nano robotic, nanomedicine 2. **Environment and sustainability** – batteries, 2D nanomaterials, electrochemical and photochemical, hydrogen, vehicle emissions and air quality, renewable energy, waste valorisation, wastewater treatment and re-use, new materials and membrane processes, algae biotechnology, ocean microbiology 3. **Advanced technologies** – computational intelligence and brain-computer, data science, biomedical data science, large-scale network analytics, intelligent drone, quantum, mobile sensing and communications, IoT communications and networking, big data, sensing and perception, robotics, machine learning, predictive analytics, behaviour analytics, data visualisation, human-centred ethical AI 4. **Engineering** – remote sensing, complex modelling, geo computing, geographical information systems, disaster management 5. …

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Strength areas of Australian universities 各大学の強み

Innovative Research Universities (IRU)

University	Strength areas
Flinders University	1. **Health science** – digital health, clinical monitoring, surgical instrumentations, assistive technology (ageing, disability, rehab), wearable technologies, cancer care 2. **Environment and sustainability** – green and clean chemistry, antifouling coatings, sustainable mining, mercury remediation, flexible electronics, silicon alternative devices, transparent electrodes, energy storage, concentrated solar 3. **Advanced technologies** – biosensors, antibacterial coatings, advanced manufacturing, autonomous systems, electromagnetic environment, bioinspired robotics and signal processing 4. **Fundamental science** – industrial biotechnology, medical biotechnology, food and agriculture biotechnology 5. **Defence and security** – explosives detection, banknote security, chemical sensors 6. …
Griffith University	1. **Health science** – cancer, infectious diseases, neurological disorders, immunology 2. **Environment and sustainability** – aquatic ecosystems, building and construction, sea cities, transport, water and waste management, sensing devices, energy storage, biodiversity conservation, sustainable agriculture, chemical pollution 3. **Advanced technologies** – quantum optics, Ion-trap quantum computing, quantum biophysics, attosecond science, microfluidics and lab-on-a-chip technology, materials for energy storage and conversion, silicon carbide, GaN devices, forensic applications of nanoscience, photoactive nanomaterials, health informatics, environmental informatics, bioinformatics 4. …
James Cook University	1. **Health science** – tropical health, medicine and biosecurity 2. **Environment and sustainability** – Topical ecosystems 3. …

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Strength areas of Australian universities 各大学の強み

University	Strength areas
La Trobe University	1. **Health science** – neurobiological Aphasia, healthcare communication 2. **Environment and sustainability** – infrastructure, monitoring and assessment, fish ecology, genetics, quantitative modelling, water management, alpine ecology 3. **Advanced technologies –** AI, machine learning, micro-nano systems, IoT, cyber-physical systems, big data, digital twins, 6G wireless communications, advanced materials, applied robotics 4. **Defence and security** – cyber security, blockchain, SCADA, smart grid measurement data, data privacy 5. …
Murdoch University	1. **Health science** – disease surveillance, precision medicine 2. **Environment and sustainability** – biosecurity, aquatic ecosystems, terrestrial ecosystems 3. **Food and agricultural** – soil and water, bioinformatics, post-harvest technologies 4. …
University of Canberra	1. **Health science** – sports integrity, applied biomechanics 2. **Environment and sustainability** – urban water, hydro rivers, natural resource management, disaster recovery 3. **Advanced technologies** – ICT4D 4. …
Western Sydney University	1. **Health science** – cardiovascular, cancer, immunity, chronic disease, diagnostics and therapeutics, sensors and imaging, neuro imaging and brain stimulation, neuromorphic audio and visuals 2. **Environment and sustainability** – soil biology and genomics, plants, future foods, water management, waste treatments 3. **Advanced technologies** – neuromorphic engineering, smart construction, cytotoxic and anti-bacterial agents, polymer and surface chemistry, preeclampsia, MRI, quantum physics, NMR 4. **Food and agricultural** – vegetable protected cropping 5. **Engineering** – infrastructure 6. …

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Strength areas of Australian universities 各大学の強み

Regional Universities Network (RUN)

University	Strength areas
Charles Sturt University	1. **Health science** – nanotechnology, dementia, Parkinson's disease 2. **Environment and sustainability** – 3. **Advanced technologies** – AI, airborne sensing and operations, extended and virtual reality 4. **Defence and security** – cyber security, biosecurity 5. **Food and agricultural** – biosecurity, aquatic systems, animal performance, animal sensing, digital farms 6. …
CQ University Australia	1. **Health science** – applied medical health, advanced clinical practice, 2. **Environment and sustainability** – clean energy, hydrogen, biofuels, 3. **Advanced technologies** – AI, machine learning, big data 4. **Fundamental science** – sports science, mechatronics 5. **Food and agricultural** – agricultural systems, precision horticulture 6. **Engineering** – railway engineering 7. …
Federation University	1. **Health science** – digital health, dementia 2. **Environment and sustainability** – water security, new energy, circular economy, microgrids, renewable energy, future fuel, hydrogen 3. **Advanced technologies** – AI, machine learning, cyber security, bioinformatics, air mobility 4. **Food and agricultural** – 3D soil, climate forecast, online farm, precision agriculture, carbon measurement, aquatic systems 5. …

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Strength areas of Australian universities 各大学の強み

University	Strength areas
Southern Cross University	1. **Environment and sustainability** – waste management, coral IVF, water quality, blue carbon, 2. **Food and agricultural** – regenerative agriculture, food security, horticulture 3. …
University of New England	1. **Environment and sustainability** – water research, aquatic ecology, biodiversity, 2. **Food and agricultural** – genetics, precision agriculture, SMART farm, weed science 3. …
University of Southern Queensland	1. **Health science** – sports and exercise science, biomedical, cancer, 2. **Environment and sustainability** – energy and bioresource recycling 3. **Advanced technologies** – robotics, automation, machine vision, advanced composites manufacturing, AI, data science, cyber security 4. **Fundamental science** – functional materials, civil composites 5. **Food and agricultural** – crop health, biosecurity, irrigation and water management, 6. **Engineering** – astrophysics, hypersonics, rocketry, materials engineering, electrical, mechanical and mechatronic, mining engineering 7. …
University of the Sunshine Coast	1. **Health science** – applied microbiology, biodiscovery, MRI, neuroimaging 2. **Environment and sustainability** – conservation and biodiversity 3. **Advanced technologies** – autonomous vehicles, AI, 4. **Fundamental science** – sports science, 5. **Defence and security** – cyber security, 6. **Food and agricultural** – aquaculture biotechnology, forestry 7. **Architecture** – urban design and planning 8. **Engineering** – 9. …

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免責

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