



Photo (L-R): Dr. David MaGee, Dr. Laura Richard, Hans Klohn, Dr. Zhen Lei, Karen Ludwig, and Dr. Paul Mazerolle.
Credit: Jeff Crawford/Photo UNB

The University of New Brunswick's Off-site Construction Research Centre (OCRC) has announced [Dr. Zhen Lei as the OSCO Research Chair in Off-site Construction](#) with funding support from Atlantic Canada Opportunities Agency (ACOA).

By leveraging technology and optimizing alternate solutions to conventional “stick-built” on-site construction, funding support from OSCO Construction Group and ACOA will help lay the foundation for innovation and entrepreneurship in off-site construction research in New Brunswick.

ACOA has invested \$634,434 through the Regional Economic Growth Innovation program. When combined with \$344,000 from OSCO's contribution of \$2 million in 2018, OSCO and ACOA will provide more than \$978,000 funding to operationalize OCRC at UNB.

Two new [Canada Research Chairs have been appointed](#) and one Canada Research Chair has been renewed at the University of New Brunswick, awards valued at \$2.4 million.

Dr. Elizabeth Mancke, Dr. Stijn De Baerdemacker, and Dr. Veronica Whitford will continue their research excellence through the Canada Research Chairs Program, which highlights research in engineering and the natural sciences, health sciences, humanities, and social sciences.

The Canada Research Chairs Program helps universities to attract and retain the best talent from around the world, assisting universities to achieve research excellence. Chairs advance the frontiers of knowledge in their fields, not only through their own work, but also by teaching and supervising students and coordinating the work of other researchers.



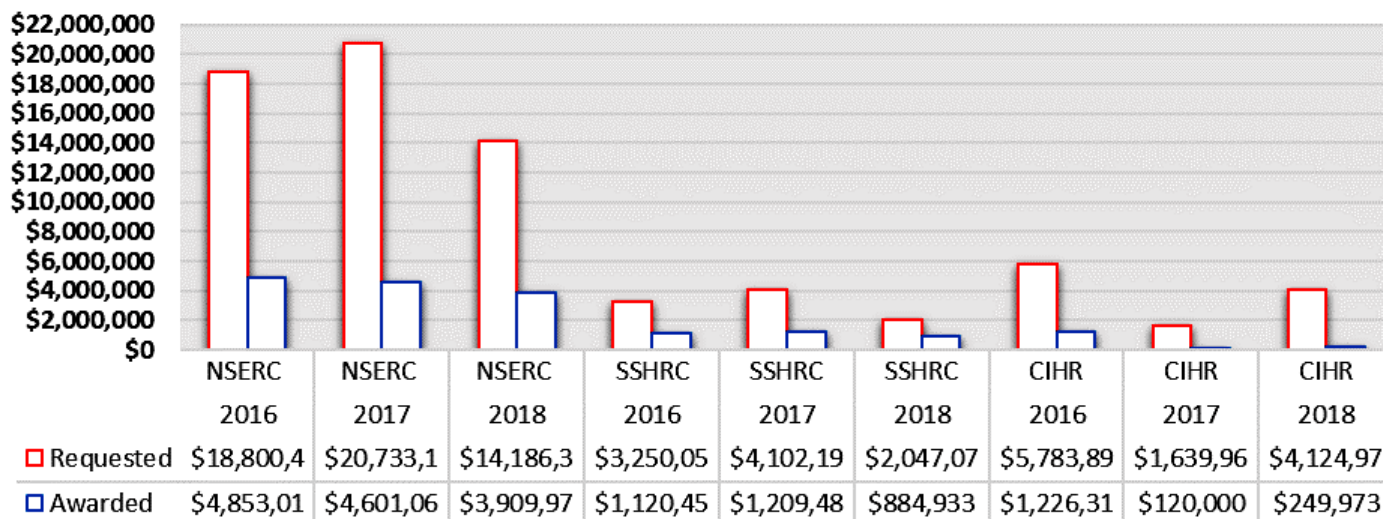
Photo: Dr. Stijn De Baerdemacker.
Credit: Jeff Crawford/UNB

This edition of [Research Matters](#) highlights Tri-Council results and innovation activities from Fiscal Year 2018–19 as found in the table of contents below.

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Tri-Council – 2018 Results

Tri-Council Results



Canadian Institutes of Health Research (CIHR)
 Natural Sciences and Engineering Research Council of Canada (NSERC)
 Social Sciences and Humanities Research Council of Canada (SSHRC)

For more information on these funding programs please visit [Tri-Council funding](#).

Institutional Funding

Canada Research Chairs

UNB received \$1.0 million for our six active Canada Research Chairs (CRCs) in 2018-19. During the year, UNB submitted two successful NSERC Tier 2 CRC nominations: one for Dr. Stijn De Baerdemacker (Chemistry, Fredericton) as the Chair in Theoretical Chemistry, and another for Dr. Veronica Whitford (Psychology, Fredericton) as the Chair in Cognitive Neuroscience of Bilingual Reading Across the Lifespan. Dr. De Baerdemacker's Chair began in April 2019, with Dr. Whitford taking up her Chair in July 2019. UNB also submitted a successful renewal for Dr. Elizabeth Mancke's (History, Fredericton) Tier 1 Chair in Atlantic Canada Studies.

UNB had three Chairs end in this period. The Tier 2 Chair in Advanced Geomatics Image Processing held by Dr. Yun Zhang (Geodesy & Geomatics Engineering) ended after the completion of his second and final term. Dr. John Spray's (Earth Sciences) Tier 1 Chair in Planetary Materials ended early upon his retirement at the end of 2018. Dr. José Domene (Education) left the university, thus ending his Tier 2 Chair in School to Work Transition.

UNB's CRC contingent as of April 30, 2019:

	Name	Department/Faculty	CRC in...	Council/Tier
1	Bruce Balcom	Physics	Materials Science Magnetic Resonance Imaging	NSERC T1
2	Stijn De Baerdemacker	Chemistry	Theoretical Chemistry	NSERC T2
3	Ali Ghorbani	Computer Science	Cybersecurity	NSERC T1
4	Elizabeth Mancke	History	Atlantic Canada Studies	SSHRC T1
5	Yonghao Ni	Chemical Engineering	Pulp and Paper Science and Engineering	NSERC T1
6	Scott Pavey	Biological Sciences	Aquatic Molecular Ecology and Ecological Ge-nomics	NSERC T2

Intellectual Property Management, Technology and Knowledge Transfer

The Industry-Government Services (IGS) division of the Office of Research Services (ORS) connects business to researchers and guides research to market. In the fiscal year 2019, IGS:

- Secured 5 new Industry Engagement projects through the Springboard Innovation Mobilization program, to engage industry and move technologies through the commercialization process;
- Managed 11 new invention disclosures;
- Entered into 7 technology transfer agreements and options with industry;
- Filed 12 patent applications;
- Had 6 previous patent applications issued as registered patents;
- Received licensing revenues of \$702,873;
- Assisted in the creation of 2 Spin-Off Companies that licensed IP assigned to UNB through ORS;
- Hosted or assisted with 6 industry workshops, and another 3 internal workshops.

Technology and Knowledge Transfer (Last 5 Fiscal Years)

Fiscal Year (May 1 – April 30)	2014-15	2015-16	2016-17	2017-18	2018-19
Disclosures	14	20	21	8	11
Patent Applications Filed	13	7	12	11	12
Patents Issued	8	16	10	7	6
License & Options Agreements	12	12	14	14	7
License Revenue	\$106,713	\$91,410	\$94,257	\$193,384	\$702,873
Spin-offs Created ⁽¹⁾	1	0	0	0	2

Note #1: Spin-offs represent companies created through licensing of IP assigned to UNB by inventors, not all UNB-related start-up companies. IGS assisted a number of UNB-related spin-offs through the provision of advice and template agreements during the period.

Since the establishment of the Intellectual Property Management Program within the Office of Research Services in late 1999, UNB has been active in transferring technologies into the marketplace, with a strong focus on industry collaboration. In the period from May 1, 2000 to April 30, 2019, IGS has:

- Managed 316 invention disclosures;
- Filed patent applications for 110 separate technologies (many of these technologies involved filing one technology/patent in multiple jurisdictions);
- Had 99 patents issued;
- Filed 19 Section 9 trade-marks for the University (note: other departments at UNB also filed section 9 trade-marks);
- Completed 172 technology transfer deals;
- Secured licensing revenues and patent reimbursements of just under \$5 million;
- Assisted in the creation of 22 UNB spin-off companies.

Industrial Research Assistantship Program (National Research Council)

Since 2006, the National Research Council (NRC), through UNB’s Office of Research Services (ORS), has been providing short-term scientific or technical assistance to Canadian, for-profit, small-to-medium enterprises (SMEs) under the NRC-IRAP Contribution to Organization (CtO) Program.

The objective of the CtO Program is to support the innovative needs of Canadian SMEs through the provision of short-term technical assistance from faculty, staff and students at UNB. The CtO Program helps build and integrate innovation capacity in Canada and encourages investment in R&D activities that have clear commercialization goals.

UNB works with individual companies to provide applied research services on a project within, but not limited to, the following areas:

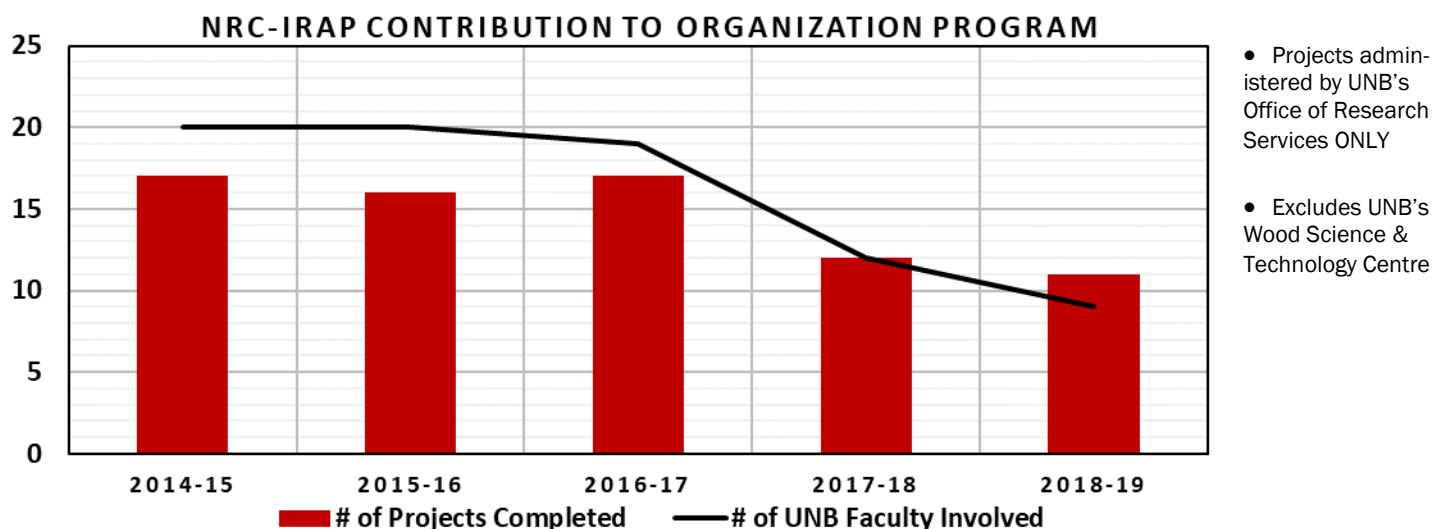
- ⇒ Scientific or technical business advice;
- ⇒ New product/process development or improvement;
- ⇒ On-site troubleshooting of issues (in manufacturing, etc.);
- ⇒ Prototype/proof of concept evaluation;
- ⇒ Reliability/quality improvement;
- ⇒ Product testing;
- ⇒ Technology and/or literature searches/reviews;
- ⇒ Technical training of company staff;
- ⇒ Seminars/conferences on specific technical issues of interest to industry;
- ⇒ Ad-hoc advice.

Each project is assessed by NRC-IRAP for its plan and challenges, the researcher’s capacity to achieve success and the potential impact the project will have on the business, and Canada. There must be a viable business opportunity and the company must plan to commercialize the results.

For the 2018-2019 fiscal year, UNB administered 23 NRC-IRAP CtO projects involving 22 different UNB faculty, staff or students. The projects were worth a total of \$102,763.65.

- ⇒ UNB’s Office of Research Services administered 12 consultation projects, worth \$49,303.65.
- ⇒ UNB’s Wood Science & Technology Centre administered 11 consultation projects, worth \$53,460.

Since its inception in 2006, a total of 236 projects have been completed under this program through ORS.





Mitacs Academic Partner Report – F2018-19 Results

As a [Mitacs](#) full partner, the **University of New Brunswick** accessed the following programs in 2018-19:

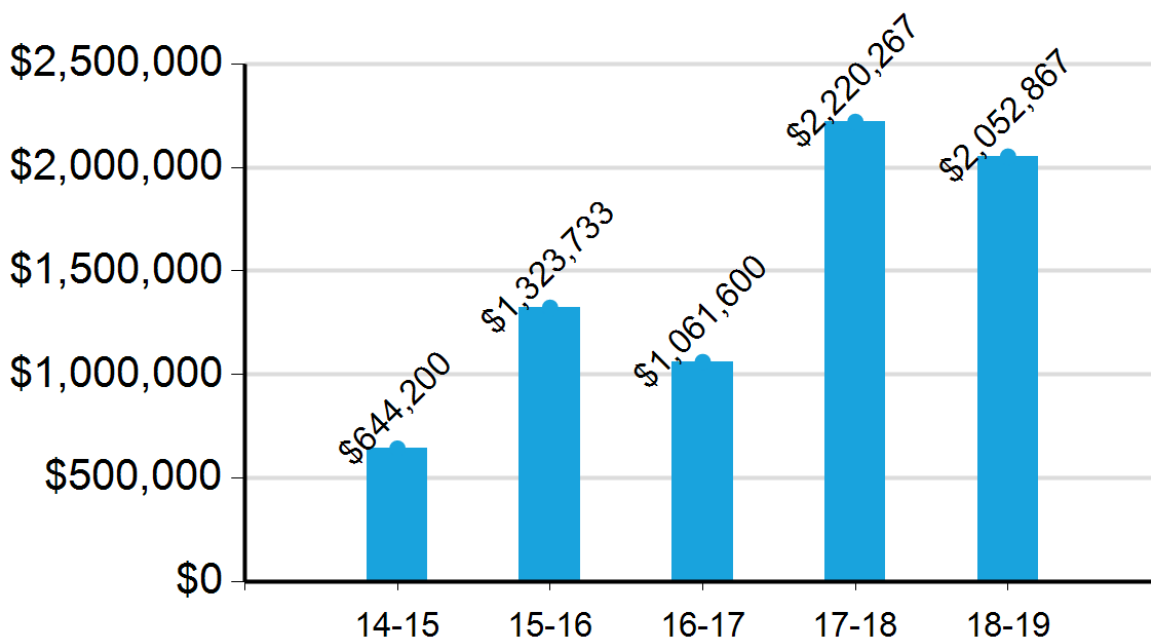
- **Accelerate:** 130 Accelerate internship units submitted, worth \$1,866,667
- **Accelerate International:** 18 units submitted, worth \$240,000
- **Accelerate Entrepreneur:** 5 units submitted, worth \$75,000
- **Elevate:** No fellowships awarded
- **Globalink Research Internships (GRI):** 10 international interns hosted at UNB in the summer of 2018, worth \$120,000
- **Globalink Graduate Fellowships:** 1 fellowship awarded, worth \$15,000
- **Globalink Research Awards:** 2 awarded, worth \$12,000
- **Training:** 48 participants attended training workshops, worth \$19,200
- **Total Projects:** 23

The total value to the University of New Brunswick in 2018-19 was **\$2,052,867**.

During the 2018-19 fiscal year **\$1,890,333** in cash was disbursed to the University of New Brunswick. This total includes program funding that had been awarded (but not disbursed) in previous fiscal years, as well as funding installments that are disbursed over multiple years.

The **total estimated value** to the University of New Brunswick in the last ten years was **\$9,999,933** (i.e. Training, GRI). A total of **\$5,571,159** in cash has been sent to the University of New Brunswick over the past ten years.

5 Year Trend - Total Estimated Value

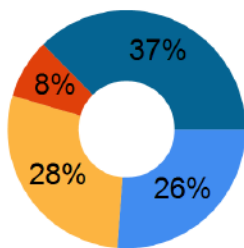




Mitacs Accelerate Statistics – 2018-2019

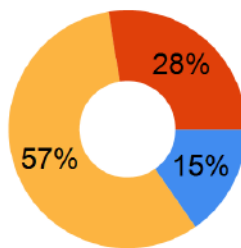
Mitacs tracks a number of details relating to Accelerate internships. The following charts summarize data pertaining to the University of New Brunswick’s past Accelerate projects submitted in 2018–2019.

Intern Degree



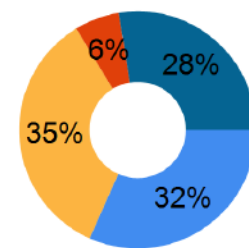
- Doctorate
- Masters
- Other/Undisclosed
- Post-Doctoral

Intern Gender



- Female
- Male
- Undisclosed

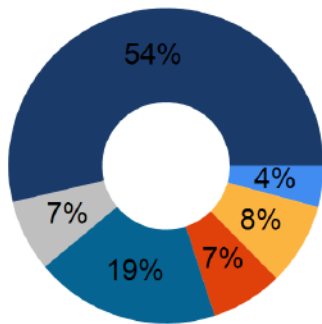
Intern Citizenship



- Canadian Citizen
- Foreign
- Permanent Resident
- Undisclosed

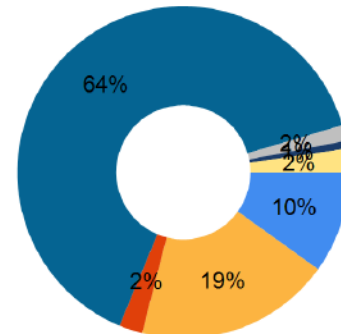
Industry sector as defined by NAICS code

Industry Sector*



- Educational services
- Information and cultural industries
- Management of companies and enterprises
- Manufacturing
- Others
- Professional, scientific and technical services

Academic Disciplines



- University of New Brunswick
- Business
 - Computer Science
 - Earth Sciences
 - Engineering
 - Life Sciences
 - Mathematical Sciences
 - Social Sciences/Arts Humanities



New Brunswick Innovation Foundation (NBIF) – 2019 UNB RAI Report

The Research Assistantships Initiative (RAI) is a joint initiative between [NBIF](#) and the New Brunswick Department of Post-Secondary Education, Training and Labor (PETL). It provides applied researchers some of the funding they need to hire undergraduate and graduate student research assistants. Researchers may apply for more than one assistant.

Researchers can be funded for more than one graduate research assistantship in any specific round. Graduate Research Assistantships are awarded at \$12,000 each. Undergraduate Assistantships are \$6,000 each. RAI contributions can be used to top up other funding sources and can be allocated to one or more students. Funding is advanced to the college or university first, and then disbursed to the student(s) in the form of a salary, fellowship, or stipend. Ideally, all funds are to be used within one year, however, any unused funding is automatically extended for one additional year with NBIF approval. RAI funding is not transferable to other colleges or universities.

- ◆ Total applications submitted: **50 (\$1,656,000)**
- ◆ Total student awards applied for: **164**
 - ⇒ 112 graduate
 - ⇒ 52 undergraduate
- ◆ Total applications funded: **36 (\$1,068,000)**
- ◆ Total student awards funded: **106**
 - ⇒ 72 graduate
 - ⇒ 34 undergraduate

Institution	Traditional RAI	Number of Undergrads	Number of Grads
University of New Brunswick	\$1,068,000	34	72



NB Health Research Foundation (NBHRF) - Financial Contributions to UNB

The [New Brunswick Health Research Foundation](#) (NBHRF) is the primary funder for health research in the province of New Brunswick. The table below shows the [funding opportunities](#) that NBHRF provided to UNB as a post-secondary institution in the Province of New Brunswick during fiscal years 2017-2018 and 2018-2019.

Overall, NBHRF and partners funded **\$2,426,977 in 2018-19** to UNB health researchers and their undergraduate and graduate students. Those funds also supported projects and created jobs such as, but not limited to, technicians, research assistants and/or research associates.

The value of these grants and awards includes the matching and leveraging portion of funds obtained by other parties such as private partners, federal granting bodies, national agencies, and health charities.

Program	2017-18	2018-19	# of Investigators	# of Undergrads	# of Graduates
Grants					
Establishment	\$ 49,000	\$ 60,000	2	n/a	n/a
Bridge	\$ 70,000	\$ 105,000	4	n/a	n/a
Strategic Initiative	\$ 180,900	\$ 101,000	2	n/a	n/a
Workshop	\$ 4,275	\$ 18,789	4	n/a	n/a
Travel awards	\$ 2,917	\$ 7,491	2	n/a	5
Wellness Fund	\$ 160,500	\$ 72,939	2	n/a	n/a
CIHR-SPOR-MSSU	\$ 330,300	\$ 332,777	1	n/a	n/a
CIHR-SPOR-PIHCI	\$ 115,625	\$ 110,000	1	n/a	n/a
CIHR-SPOR-NCD-CHILD	\$ 50,000	\$ 50,000	1	n/a	n/a
e-HIPP	\$ 31,250	\$ 41,250	1	n/a	n/a
AGEWELL Innovation Hub	\$ 105,750	\$ 149,250	1	n/a	1
CFI	\$ -	\$ 50,000	1	n/a	n/a
CABHI Grants	\$ 149,934	\$ 123,182	3	n/a	n/a
Diabetes Canada Grant	\$ 20,000	\$ 20,000	1	n/a	n/a
PCC Grant	\$ 30,404	\$ 30,404	1	n/a	n/a
Salary Awards					
Summer Studentships	\$ 65,920	\$ 54,384	n/a	9	n/a
MSc Studentships	\$ 17,000	\$ 24,000	n/a	n/a	2
PhD Studentships	\$ 24,500	\$ 10,230	n/a	n/a	2
Postdoctoral Fellowships	\$ -	\$ 102,500	n/a	n/a	2
MSSU Awards	\$ 142,000	\$ 214,334	n/a	n/a	8
Clinical Scholarships	\$ -	\$ 25,000	1	n/a	n/a
Chairs	\$ 428,500	\$ 524,500	4	n/a	n/a
AGEWELL Awards	\$ 28,750	\$ 57,062	n/a	n/a	2
CFN Awards	\$ 20,684	\$ 114,200	2	2	2
BHCRI Awards	\$ 13,685	\$ 28,685	1	n/a	2
CA\$ TOTAL	\$ 2,041,894	\$ 2,426,977	35	11	26

Research Outputs

The Research Output Indicators measures each institution’s success in publishing in the peer reviewed academic literature. We are reporting comparative rankings in the total number of publications produced by UNB based on ReSearch InfSOURCE Inc’s statistics. The ranking position is based on all universities assessed, however, we are only reporting the rankings for our selected peer group of comprehensive universities. ReSearch InfSOURCE Inc’s statistics are based on publication data obtained from Observatoire des sciences des technologies’ (OST) Canadian bibliometric which contains data from SCI-Expanded, SSCI, and AHCI databases of Thompson Reuters; and faculty data obtained from Statistics Canada and the ReSearch InfSOURCE University R&D Database.

1. “Total Number of Publications” includes articles, notes, and reviews published by researchers affiliated with Canadian universities and research hospitals in 12,571 peer-reviewed scientific international journals covering natural sciences, health sciences, and social sciences and humanities.
2. “Publication Intensity” is defined as the total number of publications per full-time faculty (full, associate, and assistant faculty positions are only included). It is estimated that there is, on average, a minimum 2-year publication lag time.
3. “Publication Impact” points are based on the Average Relative Impact Factor (ARIF) which was developed and provided by OST. It is based on a measure of perceived impact of research through a calculation of citations received by journals. The impact factor does not measure the specific number of citations per article (i.e. direct impact), but rather, is a measure of the probability of being cited (i.e. perceived impact). OST developed the ARIF to compare the impact factor from several specialities as an article’s probability of being cited is not the same for all fields. The ARIF does not include journals on the humanities.

Research Output Indicators											
YEAR	Waterloo	Guelph	Victoria	Simon F	Carleton	Memorial	Manitoba	UNB	Concordia	Windsor	Regina
Total Number of Publications- RANK											
2014	10	15	18	15	20	22	12	27	23	26	29
2015	10	16	18	17	21	23	12	26	22	28	29
2016	10	16	18	17	20	23	12	26	22	27	28
2017	10	16	19	17	20	23	12	26	22	27	29
2018	10	17	18	16	20	23	12	26	22	27	28
Publication Intensity - RANK											
2014	7	12	15	14	20	29	18	24	26	25	21
2015	6	13	14	15	21	32	18	23	37	26	24
2016	5	11	14	15	19	33	17	21	23	24	20
2017	5	12	16	14	19	28	17	22	20	30	25
2018	7	12	13	14	19	24	17	21	20	26	23
Publication Impact - RANK											
2014	22	25	9	4	30	28	24	42	31	37	20
2015	19	25	12	10	30	31	23	37	35	27	33
2016	10	25	9	11	31	34	19	46	28	29	20
2017	18	21	15	9	28	19	20	42	32	29	26
2018	12	23	10	5	28	33	17	42	25	29	35