

CURRICULUM VITAE



NAME: Randeep RAKWAL
(Given name) (Family name)

DATE OF BIRTH: November 02, 1968 (49 Years)

PLACE OF BIRTH: New Delhi, (India)

NATIONALITY: Indian (**Permanent Resident, Japan**)

LANGUAGE ABILITY: ENGLISH & HINDI (as Native Languages), Japanese

PRESENT STATUS: Professor,
Dr. Randeep RAKWAL, Ph.D.
Faculty of Health and Sport Sciences, & Tsukuba International
Academy for Sport Studies (TIAS), UNIVERSITY OF TSUKUBA
Address: Global Sport Innovation (GSI) Bldg. Room No. 403, 1-1-1
Tennodai, Tsukuba 305-8574, Ibaraki, Japan
Email - plantproteomics@gmail.com
Office Email: rakwal.randeep.fu@u.tsukuba.ac.jp
Mobile – (+81) 090-1853-7875
Tel.: 029-853-2681 ; Website: <http://tias.tsukuba.ac.jp/>
Visiting Lecturer
Hoshi University School of Pharmacy and Pharmaceutical Sciences,
2-4-41 Ebara, Shinagawa-ku,
Tokyo 142-8501, Japan
Visiting Professor
First Department of Anatomy
Showa University School of Medicine,
1-5-8 Hatanodai, Shinagawa-ku,
Tokyo 142-8555, Japan
Honorary Senior Scientist
Research Laboratory for Biotechnology and Biochemistry (RLABB),
GPO Box 13265, Kathmandu, Nepal
**# RDA Honorary Scientist and Scientific Advisor on Agricultural
Green Technology**
Rural Development Administration (RDA)
Republic of Korea
Email: plantproteomics@gmail.com
Member
Iitate-mura Society for Radioecology (IISORA)

CARRIER AIM: Education, Research and Management for Graduate Students

EDUCATION:

Ph.D. (Biochem. and Biotech.)	Tokyo Univ. Agri. & Tech.	1997	Japan
M.Sc. (Ag. Plant Pathology)	G.B. Pant Univ. Agric. & Tech.	1992	India
B.Sc. (Botany Hons.)	Delhi University	1989	India

Topic of the Ph.D. Thesis:

“Studies on the role of jasmonic acid in rice phytoalexin production”.

Topic of the M.Sc. Thesis:

“Chemical control of *Fusarium moniliforme* J. sheld var. *intermedium* Neish & Leggett and *Neurospora* sp. Shear & Dodge encountered during the cultivation of *Agaricus bisporus* (Lange) Sing”.

RESEARCH BACKGROUND:

- 2015.04 – Present:** Professor, TIAS (Faculty of Health and Sport Sciences, University of Tsukuba, Tsukuba, Japan)
- 2013.04 – 2015.03:** Professor, Organization for Educational Initiatives (University of Tsukuba, Tsukuba, Japan)
- 2015.06 – Present:** Visiting Lecturer (Hoshi University School of Pharmacy, Tokyo, Japan)
- 2013.06 – Present:** Visiting Professor (Showa University School of Medicine, Tokyo, Japan)
- 2011.10 – 2013.03:** Professor, Faculty of Life and Environmental Sciences (University of Tsukuba, Tsukuba, Japan)
- 2011.04 – 2013.03:** Professor, GGEC Program (University of Tsukuba, Tsukuba, Japan)
- 2011.04 – 2013.03:** Part-time Lecturer (Showa University School of Medicine, Tokyo, Japan)
- 2010.04 – 2011.03:** Lecturer (Showa University School of Medicine, Tokyo, Japan)
- 2010.04 – 2012.03:** Visiting Professor (Toho University, Funabashi, Japan)
- 2008.04 – 2010.03:** Researcher (Mental Stress Team, HTRC, AIST, Japan)
- 2004.03 – 2008.03** Researcher (HSS, AIST, Japan)
- 2002.03 – 2004.02:** JSPS post-doctoral fellow (AIST, Japan)
- 1999.01 – 2001.12:** JST post-doctoral fellow (NIAS, Japan)
- 1998.04 – 1998.12:** Post-doctoral fellow (NIAS, Japan).
- 1997.04 – 1998.03** CREST post-doctoral fellow (Ibaraki University, Japan)
- 1994.04 – 1997.03:** Monbusho scholarship for Ph.D. degree in “Biochemistry and Biotechnology (United Graduate School)” from Tokyo University of Agriculture and Technology, Tokyo, Japan.
- 1993.10 – 1994.03** Research trainee at Ibaraki University (Monbusho scholarship).
- 1990.01 – 1992.08** M.Sc. Ag (Plant pathology) at the Mushroom Research Laboratory, College of Agriculture, G.B. Pant University, India.
- 1989.04 – 1989.12** M.Sc. Hons (Botany) Delhi University, India (Changed Programs after 9 months).
- 1986.04 – 1989.03** B.Sc. Hons (Botany) Delhi University, India.

KEYWORDS:

Environmental Stress Biology, Plants, Human Health and OMICS, DOHaD, Radiation, Rice, Rat, Mouse, Mental Stress, Proteomics, Genomics, Metabolomics; Graduate General Education, Education in 21st Century, Global Communication, Mentoring.

CURRENT SCIENTIFIC and EDUCATIONAL INTERESTS:

SCIENTIFIC:

Research into plant (especially rice model) self-defense mechanism, stress signalling components (plant hormones as signals), biotic/abiotic stress responses, including pathogen-host interaction, and effect of environmental pollutants on plants.

Use of “omics (especially proteomics) technologies” in defining/exploring the **plant** response to jasmonates, radiation and ozone/sulphur dioxide/UV-radiation, and **rat/mouse models** (brain regions, liver, spleen and blood) for

neurological disorders and mental stress, ischemia, role of neuropeptides, alcoholism, exercise, anti-aging medicine, etc., at the molecular level.

Biomarker discovery for stress/disease ("diagnostics") in plants and mammals.

Research Coordination of Research Projects of Master-course and Ph.D. students and **promotion of omics technologies** for problem solving in India, Nepal, Korea, Panama, Thailand and Brazil.

DOHaD project, Anti-aging medicine, Natural products, Agri-medicine/business, Aromatherapy, Exercise neuroscience, Yoga, and Radiation Effects in Plants.

EDUCATIONAL:

CURRENT EDUCATIONAL INTERESTS

- i) **Designing, Coordinating, and Teaching Courses (in English) for Graduate Students** at the University of Tsukuba, under the Graduate General Education Courses (GGEC) Program (<http://www.tsukuba.ac.jp/english/education/g-courses/kyoutsuukamoku.php>)
- ii) **Co-managing the GGEC program**, via active interaction with the faculty and staff of the GGEC program.
- iii) **Biotechnology Course (in English) to Undergraduate Students** at the University of Tsukuba College of Biological Sciences (School of Life and Environmental Sciences) under the JTP (Junior Year at Tsukuba Program 2012-2013; <http://www.intersc.tsukuba.ac.jp/pdf/JTP%202012-2013.pdf>). (completed)
- iv) **Teaching two courses**, in English, on **Advanced English/Critical Thinking, Science Writing** (01EH143, Master's Program; and PhD program) at **Institute of Health and Sport Sciences** (UT).
- v) **Teaching & Co-Supervising Graduate Students at Universities in Japan** (Showa University, School of Medicine; Toho University, Faculty of Science; Ibaraki University, School of Agriculture)
- vi) **Organizing and Taking Students Experiments at Universities in Japan**, at Department of Anatomy I (Showa University) and Department of Biology (Toho University)
- vii) **Teaching & Co-Supervising Graduate Students Internationally** at Sugarcane Breeding Institute (Coimbatore, TN) and Banaras Hindu University (Varanasi, UP), India, and Sejong University (Seoul, South Korea).
- viii) **Involved in Designing the Syllabus** on Biochemistry and OMICS (Genomics, Proteomics and Metabolomics) at the Universal Science College (www.uscollege.edu.np), Kathmandu, Nepal (as of July 1, 2007).
- ix) **Coordinating/Organizing Proteomics Workshops in Developing Countries and under the INPPO Banner**. The first one was held at Kathmandu, Nepal (Kathmandu Humboldt Kolleg (Nov. 15 – 18, 2010); PROTEOMICS: OVERVIEW AND APPLICATIONS A Mini Symposium, November 17, 2010 (02:00 PM - 4:30 PM)); the second one at University of Florida; and the third at India (Delhi University, Dept. of Botany).
- x) **Initiated and Established INPPO (A GLOBAL INITIATIVE-** a global plant proteomics organization to properly organize, preserve and disseminate collected information on plant proteomics. We call this organization "International Plant Proteomics Organization (INPPO; <http://www.inppo.com>)"), with the aim of **Educating the Younger Generation** worldwide on plants and proteomics and our common future.

SPECIFIC ACTIVITIES FOR STUDENTS

- xi) **Teaching graduate students** in general education disciplines (course-specific and related activities for students) under GGEC program.
- xii) **Scientific Writing and Reading (in English) to Students** (Central Library – Learning Square) University of Tsukuba

- xiii) **Teaching courses**, in English, on **Advanced English/Critical Thinking, Science Writing** for Graduate students in Sport Sciences (UT).
- xiv) **Research coordination** of academic aspects of Master-course and Ph.D. students and post-docs and researchers via promotion of omics-technologies in biological sciences in University of Tsukuba, other Japanese universities and internationally as part of collaborative research projects/works.
- xv) **Mentoring** students.

PAST

Co-supervised students at under-graduate and graduate courses from Japan and abroad.

1. Co-supervised the Ph.D. thesis in MEDICINE and PHARMACY and research of a MD at Showa University (Dr. M. Hori) on PACAP38 and BRAIN STROKE), (2010-2015), and also Ph.D. research of now Dr. Kubo (Aromatherapy) at Showa University, School of Medicine (2010-2014).
2. Co-supervised the Ph.D. thesis and research of two Ph.D. students at Tsukuba University (Dr. Kim DW, Abiotic stress response in Rice) and Chiba University (Dr. Rena M, Yeast heat shock response and mutant), respectively (2004-2006).
3. Co-supervised the research of two 4th year undergraduate students (Furusawa T, Hemolymph proteomics and Horie K, Mushroom proteomics) at Ibaraki University (2006-2007).
4. Co-supervised the research two M.Sc. course students (Furusawa T, Royal Jelly proteomics and Horie K, Mushroom proteomics) at Ibaraki University in food function for human health (2007~2009).
5. Co-supervised M.Sc. course and Ph.D course student (Inoue K) from Laboratory of Sports Medicine, Tsukuba University, Japan. (2008~2013) and Ph.D research of Yook JS (2014-2016) form Soya Laboratory.
6. Co-supervised the Ph.D. work of a student (Naga S) from India on proteomics of Sugarcane under pathogen infection and attack (Sugarcane Breeding Institute (SBI), Coimbatore, Tamil Nadu 641007, India) (2008~2010).
7. Supervised 4th year study on effects of MK801 (NMDA receptor antagonist) of a student (Kobayashi Y) from Toho University (2009-2010).
8. Co-supervised the Ph.D. work of a student (Sarkar A) from India on proteomics of rice and wheat under ozone pollution (Banaras Hindu University (BHU), Varanasi, UP 221005, India) (2008~2011).
9. Co-supervised eight (8) 3rd and 4th year undergraduate students at the Laboratory of Neuroscience, Faculty of Science, Toho University (2010~2011).
10. Co-supervised (1) M.Sc. course student research at the Laboratory of Neuroscience, Faculty of Science, Toho University (2012~2014).
11. **Coordinated** students (graduate and undergraduate) **symposium** from University of Tsukuba side as part of Tri-University (Osaka, Tsukuba, and Waseda universities) Student Symposium Series held at Osaka University (2011, 2012, and 2013).

CURRENT

1. Teaching 2 courses, in English, on **Research Management Skills (RMS)** (01ZZ206) and **Global Communication Skills Training (CST)** (01ZZ313), and **YOGA Course** (01ZZ751) under the GGEC program for **graduate students**.

- The **RMS** (under Academic Management Skills - Encouraging proactive attitudes to set one's own research topics, implement them, and achieve results) course focuses on skills required to manage to individual research via an interactive lecture style and teaching from the experiences of the instructor.

- The **CST** (under **Distributing Information, Communication Skills - Improving communication and transmitting information capability-**) course focuses on strengthening the communication skills in global work environment.

Social Innovation Projects: - <https://www.tsukuba.ac.jp/en/news-list/n201608011002>
& <http://teamyoga5.wpblog.jp/>

2. **Coordinating/teaching** courses at the GGEC program.

a) **International Education & Learning Effective communication and Presentation Skill Course**

(01ZZ313, now CST) under Distributing Information, Communication Skills - Improving communication and transmitting information capability.

b) **Career Development for University Students** (01ZZ521) under Career Management - Preparing for the business and social environment you will encounter after graduation.

c) **Scientific Discoveries and Creativity** (01ZZ618) under Intellectual Foundation Courses - Providing broad general knowledge in becoming well-educated individuals

d) **Previously, Global Communication Practice (GCP)** (01ZZ412). The **GCP** (under Retaining Internationalized Characters - Developing proficiency towards becoming internationalized individuals) course focuses on the skill up of the graduate students via improving their scientific communication abilities through practical one-to-one lesson/tutorial.

3. **Students** (graduate and undergraduate) **presentation training** for International conferences; **ASOBINET** program (2011, CHINA), Japan-China and **Japan-China-Korea Graduate Student Forums** (2011, CHINA; 2012, JAPAN; 2013 KOREA; 2014 CHINA).

4. **Coordinating the Intel Luncheon Chat program** as part of University of Tsukuba-GGEC program and Intel KK Japan collaborative efforts.

5. **Assisting** student activities (advice and discussions) in COSMOS café and CityChat Café.

6. **Counseling** students from diverse disciplines of the University of Tsukuba in academic and life-related issues under the mandate of the GGEC program office.

7. Co-supervising Ph.D. course student research from Laboratory of Sports Biochemistry, Institute of Health & Sport Sciences, Tsukuba University, Japan (2010~).

8. Co-supervising Ph.D. course student (international student from Brazil) research from School of Agriculture, Ibaraki University, Japan (2011~2015).

9. Co-supervising one (1) Ph.D. course student of Tohoku University, research on biological effects of radiation in rice at Iitate Mura, Fukushima at (2013~).

10. Co-supervising three (3) Ph.D. course students of Showa University, School of Medicine and Pharmacy, Fukushima at (2010~).

RESEARCH EXPERIENCES/EXPERTISE:

- Rice Proteomics, Genomics and Metabolomics
- Environmental Pollutants (Gaseous, including ozone and sulphur dioxide)
- Plant Physiology and Biochemistry
- Plant Biotic and Abiotic Stresses
- Enzyme and Protein Purification
- Jasmonates Biology
- Secondary Metabolite Extraction and Analysis
- Mushroom cultivation and disease control
- Functional Food Research
- Climate Change and sustainable agriculture
- Rat stress response using BrainOMICS
- Mice models for Disease and Anti-aging research using OMICS

PROJECTS AWARDED

1. **Kaken-C / 科研費基盤研究(C) (23591603): 2011-2013年 胎児組織に着目した成人疾患発症の分子基盤の解明 / Elucidating molecular basis of adult disease development by examining**

fetal tissues; RAKWAL RANDEEP/ラクワル ランデエプ: 70590850 (UT); awarded, 2011-2013, 3 years.

2. 1: Kaken-C / 科研費基盤研究(C) (26462745): 2014-2016年 虚血脳におけるPACAP神経保護作用効果に関わる分子的因子の同定/ PACAP and Brain Ischemic (Emergency Medicine); RAKWAL RANDEEP/ラクワル ランデエプ: 70590850 (UT)- awarded, 2014-2016, 3 years ; 2: DOHaD project-マルチオミックス解析アプローチによるDOHaD説に基づく新生児脳の解析 2016 – 2018, 3 years.

SOCIETY/ORGANIZATION

1. Initiator/Founder member of the International Plant Proteomics Organization (INPPO); wef. October 2008/January 2011
2. Member of the International Research Center for Recycle of Natural Resources” (Research Institute of Meijo University, Nagoya, Japan); wef. April 2017.
3. Member of the Japanese Association of Anatomists, 2010-2011.2012 年～
4. Iitate-Mura Society for Radioecology (IISORA; 飯舘村放射能エコロジー研究会 <http://iitate-sora.net/>) Member/メンバー
5. Newly established (2016) - Society for Sport and Olympic-Paralympic Studies (SSOPS) and Sport and Olympic-Paralympic Studies Journal (SOPSJ), Deputy Editor

PUBLICATION LIST

EDITORIALS

5. Shimizu S, Rakwal R, Kaneko F and Haggis D. 2016. Sport and Olympic-Paralympic Studies Journal: The Inaugural Issue. Sport and Olympic-Paralympic Studies Journal, Vol. 1.
4. Agrawal GK, Rakwal R, Sarkar A. 2014. Let’s review IPCC fifth assessment report (AR5) on climate change: Its high time to find a sustainable solution. International Journal of Life Sciences 8 (Issue 3): 1.
3. Agrawal GK, Rakwal R, Sarkar A. 2013. Cost of knowledge and quality of knowledge: Looking towards future. International Journal of Life Sciences 7 (Issue 1): 1.
2. Agrawal GK, Rakwal R, Sarkar A. 2012. Let’s advocate the ‘freedom of science’: to practice it, to nurture it, to speak it, and to live it. International Journal of Life Sciences 6 (Issue 1): 1.
1. Agrawal GK, Rakwal R, Sarkar A. 2011. Science, scientists, and journal. International Journal of Life Sciences 5 (Issue 1): 1.

BOOKS and BOOK CHAPTERS and APPLICATION NOTES

20. Zargar SM, Gupta N, Nazir M, Mir RA, Gupta SK, Agrawal GK and Rakwal R (2016). Omics – A New Approach to Sustainable Production, In: Breeding Oilseed Crops for Sustainable Production (Editor, Surinder Kumar Gupta) Chapter 13, pp. 317-344, <http://dx.doi.org/10.1016/B978-0-12-801309-0.00013-6>.
19. Hayashi G, Shibato J, Kubo A, Imanaka T, Agrawal GK, Shioda S, Fukumoto M, Oros G, and Rakwal R; Deepak SA, Seetaramanjaneyulu Gundimeda, Upendra Simha and Arunkumar Padmanaban (2015). A Multi-omic Approach to Reveal the Effect of Low-level Gamma Radiation on Rice Seeds. AGILENT TECHNOLOGIES, Inc., Published in the USA, December 1, 2015, 5991-6416EN (www.agilent.com/chem) (APPLICATION NOTE).
18. Zargar SM, Kurata R, Rakwal R and Fukao Y: Peptide separation methodologies for in-depth proteomics, In: Methods in Molecular Biology: Plant Cell Growth and Expansion (Editor, Jose M. Estevez), 2015, 1242: 195-209.
17. Kim DW, Agrawal GK, Rakwal R, Ahmed S, and Rohila JS: Genomic Methods for Improving Abiotic Stress Tolerance in Crops, In: Plant Biotechnology Experiences and Future Prospects (Editors, Agnès

- Ricroch, Surinder Chopra, Shelby J. Fleischer), 2014, pp. 35-42. Springer International Publishing Switzerland (ISBN: 978-3-319-06891-6 (Print) 978-3-319-06892-3 (Online)).
16. Sarkar A, Islam Md.T, Zargar SM, Dogra V, Kim ST, Gupta R, Deswal R, Bagler G, Sreenivasulu Y, Waditee-Sirisattha R, SirisatthaS, Rohila JS, Raorane M, Kohli A, Kim DW, Cho K, Saidajan AA, Agrawal GK and Rakwal R: Proteomics potential and its contribution towards sustainable agriculture , In: Agroecology within Global Environmental Change: Concepts and Applications (Ed. B. Nouredine), Chapter 00, pp. 000-000, Taylor & Francis (CRC Press), 2014. (in press)
 15. Zargar SM, Bhattacharjee C, Rai R, Nazir M, Fukao Y, Agrawal GK and Rakwal R: Omics-based approaches for improvement of the common bean, In: Omics Technologies and Crops Improvement (Ed. B. Nouredine), Chapter 12, pp. 271-301, Taylor & Francis (CRC Press), 2014.
 14. Agrawal GK, Jwa NS, Jung YH, Kim ST, Kim DW, Cho K, Shibato J and Rakwal R: Rice proteomics: sample preparation to protein identification, In: Methods in Molecular Biology: Rice Protocols (Editor, Y. Yang), The Humana Press, New Jersey, USA, 956: 151-184. doi: 10.1007/978-1-62703-194-3_12. 2013.
 13. Cho K, Han S, Tamogami S, Shibato J, Kubo A, Agrawal GK and Rakwal R: Quantification of jasmonic acid and salicylic acids in rice seedling leaves, In: Methods in Molecular Biology: Rice Protocols (Editor, Y. Yang), The Humana Press, New Jersey, USA, 956: 185-200. doi: 10.1007/978-1-62703-194-3_13. 2013.
 12. Agrawal GK and Rakwal R: Seed Development: OMICS Technologies Toward Improvement of Seed Quality and Crop Yield (Eds. Ganesh Kumar Agrawal and Randeep Rakwal), Springer Dordrecht, Netherlands, Hardcover, e-book, 2012. ISBN: 978-94-007-4748-7 (Print) 978-94-007-4749-4 (Online).
 11. Sarkar A, Agrawal GK, Cho K, Shibato J and Rakwal R: Impacts of Ozone (O₃) and Carbon Dioxide (CO₂) Environmental Pollutants on Crops: A Transcriptomics Update, Crop Plant, Dr Aakash Goyal (Ed.), ISBN: 978-953-51-0527-5, InTech, Available from: <http://www.intechopen.com/books/crop-plant/impacts-of-rising-co2-and-o3-environmental-pollutants-on-crops-a-transcriptomics-update>. 2012.
 10. Masuo Y, Shibato J and Rakwal R: ADHD animal model characterization: A transcriptomics and proteomics analysis, In: Psychiatric Disorders: Methods and Protocols (Ed. F.H. Kobeissy), Methods in Molecular Biology 829: 505-530, Chapter 20, Humana Press Inc., Springer, USA, 2012.
 9. Tamogami S, Agrawal GK and Rakwal R: Targeted quantitative analysis of JA and its amino acid conjugates in plant using HPLC-electrospray ionization-tandem mass (ESI-LC-MS/MS) spectrometry, In: Sample Preparation in Biological Mass Spectrometry (Eds. A. Ivanov and A. Lazarev), Chapter 41, pp. 869-875, Springer, 2011.
 8. Fournier I, Celine M, Wisztorski M, Rakwal R and Salzet M: MALDI imaging mass spectrometry for investigating the brain, In: Sample Preparation in Biological Mass Spectrometry (Eds. A. Ivanov and A. Lazarev), Chapter 36, pp. 765-783, Springer, 2011.
 7. Masuo Y, Hirano M, Shibato J, Nam HW, Fournier I, Celine M, Wisztorski M, Salzet M, Soya H, Agrawal GK, Ogawa T, Shioda S and Rakwal R: Brain proteomics: sample preparation techniques for the analysis of rat brain samples using mass spectrometry, In: Sample Preparation in Biological Mass Spectrometry (Eds. A. Ivanov and A. Lazarev), Chapter 11, pp. 171-195, Springer, 2011.
 6. Zargar SM, Nazir M, Cho K, Kim DW, Jones OAH, Sarkar A, Agrawal SB, Shibato J, Kubo A, Jwa NS, Agrawal GK and Rakwal R: Impact of climatic changes on crop agriculture: OMICS for sustainability & next generation crops, In: Sustainable Agriculture and New Bio-Technologies (Ed. B. Nouredine), Chapter 19, pp. 453-477, Taylor & Francis (CRC Press), 2011.
 5. Deepak SA, Rakwal R, Agrawal GK, Shibato J and Oros G: Gene quantification and disease diagnostics using real-time polymerase chain reaction, In section 10 of Cellular and Biochemical Science (Ed. G. Tripathi), IK International, New Delhi, India, Section 10, 2008.
 4. Tanaka Y, Higashi T, Rakwal R, Shibato J, Kitagawa E, Murata S, Wakida SI and Iwahashi H: Omics tools for environmental monitoring of chemicals, radiation, and physical stresses in *Saccharomyces cerevisiae*, In: Advanced Environmental Monitoring (Eds. Kim, Young J, Platt, Ulrich), Springer, Dordrecht, Netherlands, pp. 325-337, 2008.

3. Agrawal GK and Rakwal R: Rice proteomics at a glance, In: Plant Proteomics: Technologies, Strategies, and Applications (Eds. Agrawal and Rakwal), John Wiley & Sons, Inc., Hoboken, NJ, USA, Chapter 11, 2008.
2. Jung YH, Agrawal GK, Rakwal R and Jwa NS: Secretome-towards deciphering the secretory pathways and beyond, In: Plant Proteomics: Technologies, Strategies, and Applications (Eds. Agrawal and Rakwal), John Wiley & Sons, Inc., Hoboken, NJ, USA, Chapter 6, 2008.
1. Agrawal GK and Rakwal R, Plant Proteomics: Technologies, Strategies, and Applications (Eds. Ganesh Kumar Agrawal and Randeep Rakwal), John Wiley & Sons, Inc., Hoboken, NJ, USA, ISBN: 978-0-470-06976-9, Hardcover, 808 pages, 2008.

REVIEWS (and HIGHLIGHTS and OPINION)

56. Ghatak A, Chaturvedi P, Paul P, Agrawal GK, Rakwal R, Kim ST, Weckwerth W and Gupta R (2017). Proteomics survey of Solanaceae family: Current status and challenges ahead. J Proteomics May 18. pii: S1874-3919(17)30183-5. doi: 10.1016/j.jprot.2017.05.016.
55. Kim SW, Lee SH, Min CW, Jo IH, Bang KH, Hyun D-Y, Agrawal GK, Rakwal R, Zargar SM, Ravi Gupta and Kim ST (2017). Ginseng (Panax sp.) proteomics: an update. Appl Biol Chem 60(3):311–320, Online ISSN 2468-0842, DOI 10.1007/s13765-017-0283-y.
54. Zargar SM, Nagar P, Deshmukh R, Nazir M, Wani AA, Masoodi KZ, Agrawal GK and Rakwal R (2017). Aquaporins as potential drought tolerance inducing proteins: Towards instigating stress tolerance. J Proteomics Apr 13. pii: S1874-3919(17)30130-6. doi: 10.1016/j.jprot.2017.04.010.
53. Zargar SM, Mahajan R, Nazir M, Nagar P, Kim ST, Rai V, Masi A, Ahmad SM, Shah RA, Ganai NA, Agrawal GK and Rakwal R (2017). Common bean proteomics: Present status and future strategies. J Proteomics Mar 25. pii: S1874-3919(17)30104-5. doi: 10.1016/j.jprot.2017.03.019.
52. Gupta R, Min CW, Wang Y, Kim YC, Agrawal GK, Rakwal R and Kim ST (2016). Expect the unexpected enrichment of “hidden proteome” of seeds and tubers by depletion of storage proteins. Frontiers Plant Science 7:761. doi: 10.3389/fpls.2016.00761. (Mini Review)
51. Asare F, Sawae Y and Rakwal R (2016). Literature linkages between disability discrimination and sport in the last two decades. Sport and Olympic-Paralympic Studies Journal 1:59-71.
50. Zargar SM, Raatz B, Sonah H, Nazir M, Bhat JA, Dar ZA, Agrawal GK and Rakwal R (2015). Recent advances in molecular marker techniques: Insight into QTL mapping, GWAS and genomic selection in plants. J Crop Sci Biotech 18: 293-308.
49. Gupta R, Lee SE, Agrawal GK, Rakwal R, Park S, Wang Y, Kim ST (2015). Understanding the plant-pathogen interactions in the context of proteomics-generated apoplastic proteins inventory. Frontiers Plant Science 6:252. doi: 10.3389/fpls.2015.00252. eCollection 2015.
48. Sharma TK, Ramanathan R, Rakwal R, Agrawal GK and Bansal V (2015). Moving forward in plant food safety and security through NanoBioSensors: Adopt or adapt biomedical technologies? Proteomics 15:1680-1692
47. Luthje S, Renaut J, Job D, Hajduch M, Carpentier S, Sarkar A, Agrawal R, Dunn MJ, Rakwal R and Agrawal GK (2015). INPPO2014, First INPPO world congress on “plant proteomics: methodology to biology”- A global platform for involving, gathering and disseminating knowledge. Proteomics 15:1631-1637. doi: 10.1002/pmic.201570084. (INPPO Highlights)
46. Masi A, Trentin AR, Agrawal GK, Rakwal R (2015). Gamma-glutamyl cycle in plants: a bridge connecting the environment to the plant cell. Frontiers Plant Science 6:252. doi: 10.3389/fpls.2015.00252. eCollection 2015
45. Zargar SM, Nazir M, Hajduch M, Rakwal R, Agrawal GK (2015). Towards a common bean proteome atlas: looking at current state of research and need for a comprehensive proteome. Frontiers Plant Science 6:201. doi: 10.3389/fpls.2015.00201. eCollection (OPINION)
44. Gupta R, Wang Y, Agrawal GK, Rakwal R, Jo IH, Bang KH, Kim ST (2015). Time to dig deep into the plant proteome: a hunt for low-abundance proteins. Frontiers Plant Science 6:22. doi: 10.3389/fpls.2015.00022. (OPINION)

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OTHERS (Conferences/News/Proceedings)

1. Kazuyo NAGAHAMA, Kaoru Saito and Randeep Rakwal, 2014, Forest Common Resources and Sustainability: Van (Forest) Panchayat and Forest Protection Committee in Garhwal, India, *The International Forest Review*, no.5, vol.16, pp. 75.

OTHERS (INTERVIEWS)

2. Research Profile (2008). Unlocking the secrets of the rice secretome. J. Proteome Res. 7:5072. (Interview).
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OTHERS (PATENTS)

1. Patent for Biomarkers to Ozone/High temperature Stress in Rice

1) サクラネチンを利用したイネのオゾン影響評価方法 特許申請中
出願人：独立行政法人国立環境研究所、財団法人電力中央研究所
発明者：久保明弘、チョー キョンワン、ラクワール ランディープ、河野吉久、柴藤
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2. Patents for Marker of Neurodegenerative Disorders

2) C1s p n 遺伝子発現を指標とする精神疾患の評価方法 特許公開 2010-484
9 出願人：産業技術総合研究所、国立大学法人 北海道大学
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出願人：産業技術総合研究所、国立大学法人 北海道大学
発明者：増尾好則、ラクワール ランディープ、柴藤淳子
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4) 注意欠陥多動性障害の評価方法 特許公開 2010-4848 出願人：産業技術
総合研究所、国立大学法人 北海道大学
発明者：増尾好則、ラクワール ランディープ、柴藤淳子
平野美里、長嶋 和郎、澤 洋文
5) 血液中 TPH1 遺伝子発現を指標とする精神疾患の評価方法 特許申請中 出願人：産
業技術総合研究所
発明者：増尾好則、ラクワール ランディープ、平野美里、柴藤淳
6) ファイトアレキシン誘導剤 特許公開平 11-29412
出願人：科学技術振興事業団
発明者：児玉 治、田母神 繁、ランディープ ラクワール

3. Patent on Jasmonic acid amino acid analogues

7) ファイトアレキシン誘導剤 特許公開平 11-29412
出願人：科学技術振興事業団
発明者：児玉 治、田母神 繁、ランディープ ラクワール

12. INVITED SPEAKER

Randeep Rakwal

Themes – “Transcriptomic and proteomics profiling of low-level gamma irradiated rice at litate village, Fukushima”

2016 International Symposium and Annual Meeting of KSABC (The Korean Society for Applied Biological Chemistry): June 16th – 18th, 2016, ICC, Jeju, South Korea.

11. INVITED SPEAKER

Randeep Rakwal

Themes – “Observation of Rice Gene/Protein Expression and Rice Growth and Development by Low-level Gamma Ray Exposure in litate Village”

IISORA: Nov 17th, 2013, Youth Center, Fukushima, Japan.

10. INVITED SPEAKER

Randeep Rakwal

Themes – “Radiation effects on rice plants”

85th Annual Meeting of Genetic Society of Japan (GSJ), Workshop 13; 21st September, 2013-Keio University, Tokyo, Japan

9. INVITED SPEAKER

Randeep Rakwal

Themes – “Observation of rice gene expression by low-level gamma ray exposure in litate village”

IISORA: March 30th, 2013, Tokyo University Yayoi Auditorium, Tokyo, Japan.

8. INVITED SPEAKER

Randeep Rakwal

Themes – “Iitate mura and a chance to study biological effects of radiation using rice model at Iitate farm”
IISORA: Nov 17th, 2012, Youth Center, Fukushima, Japan.

7. INVITED SPEAKER

Randeep Rakwal

Themes – “The approach for transferable skills training (skill development and career support for doctoral students and post-docs) in ten years

The utilization of data that are collected during the approach for policymaking in UK”

At NISTEP (National institute of science and technology policy), March 22nd, 2012, MEXT, Kasumigaseki, Tokyo, Japan.

6. INVITED SPEAKER

Randeep Rakwal

Title, “Proteomic approach on abiotic stress tolerance in plants”

At the International Symposium on Green Biotechnology, October 20th, 2011; Meijo University, Nagoya, Japan.

5. INVITED TALK

Dominique Job (Presenter), Ganesh Kumar Agrawal, Abhijit Sarkar, and **Randeep Rakwal**

Title, “INPPO: an initiative for establishing the international plant proteomics organization”

At the EUPA day, HUPO 2011 – 10th World Congress, 3-7 September 2011 (4th Sept Talk).

4. INVITED NEWS ITEM

Dominique Job, Ganesh Kumar Agrawal, Abhijit Sarkar, **Randeep Rakwal** and INPPO family

Title, “INPPO: a global platform for plant proteomics”

In the EUPA bulletin, July 2011, Issue 5.

3. INVITED WORKSHOP LECTURE

Randeep Rakwal, Ganesh Kumar Agrawal, Junko Shibato, Tetsuji Imanaka, Satoshi Fukutani, Shigeru Tamogami, Satoru Endo, Sarata Kumar Sahoo, Yoshinori Masuo, Shinzo Kimura.

Title, “Ultra low-dose radiation: Stress responses and impacts using rice”

At the 52nd Annual Meeting of the Japanese Radiation Research, Hiroshima, Japan, 11th November to 13th Nov, 2009.

& Poster P2-72.

2. INVITED SPEAKER

Randeep Rakwal

Title, “Proteomics in Plants and our Abiotic Stress Environment”

At the Proteom Lux: Proteomics in Plants, Microorganisms and Environment

(<http://proteomlux.lippmann.lu>),

18th – 20th October, 2010; Luxembourg.

1. INVITED SPEAKER

Randeep Rakwal

Title, “Effects of radiation on model and non-model plants-Recent progress and Future prospects”

At the Radiation Effect of Non-human Animals and Plant (原子炉実験所平成 22 年度専門研究会),

16th – 17th November, 2010; Research Reactor Institute, Kyoto University, Kumatori, Osaka, Japan.

INTERNATIONAL/NATIONAL ASPECTS OF SCIENCE and EDUCATION

1. INITIATOR and FOUNDING MEMBER of the “International Plant Proteomics Organization (INPPO; <http://www.inppo.com>)”.

INTERNATIONAL JOURNAL LAUNCHED:

International Journal of Life Sciences (IJLS, Online International Journal from RLABB, Nepal) Associate Editor.

REFEREE FOR INTERNATIONAL SCIENTIFIC JOURNALS/GRANTS:

Referee for PROTEOMICS, PLANT CELL, JOURNAL OF PROTEOME RESEARCH, ETC, 22 journals in all, and for the National Science Foundation, USA, and European Union (EU), Taiwan Academy of Sciences and Korean Research Foundation Grant applications.

AWARDS:

- Joint Research Project JSPS and KOSEF wef. 2004, July (Govt. of Japan and Korea).
- JSPS Fellowship 2002.03-2004-02 (Govt. of Japan).
- JST Domestic Research Fellowship 1999-2001 (Govt. of Japan).
- Young Scientist Travel Fellowship (YSTF2000): University of Birmingham, Birmingham, U.K., in conjunction with the 18th International Union of Biochemistry and Molecular Biology Meeting, jointly with FEBS and the Biochemical Society (Poster presentation).
- Young Scientist Travel Award (1996): International Symposium on Rice Molecular Biology, Taipei, Taiwan (Oral presentation).
- Monbusho Scholarship (for Ph.D., 1993-1997).

RESEARCH GROUP/COLLABORATORS:

During the past 20 (starting 1993) years of my research career, I have had the opportunity to meet good and dedicated researchers (and good friends), from Nepal (Dr. Ganesh Kumar Agrawal with whom all this happened), Korea, and Japan, with whom I was able to make our semi-independent research group to actively investigate the rice/*Arabidopsis beans and maize* plant defense/stress response. Concerning the environment I had initiated around 10 years ago pioneering study on ozone and sulphur dioxide effects on rice, along with my good friend and colleague Dr. Kubo at NIES, Dr. Cho (project awarded from Korea Research Foundation for 2007 and now EEF from Ministry of Environment (MOE)); On-going MOE project on effects of ozone and high-temperature on rice yield. During my stay at HSS (Human Stress Signal Research Center till 2008.03.31) and now HTRC (w.e.f. 20080401), I was contacted by Dr. Shinzo Kimura and Tetsuji Imanaka, and we developed a strong and meaningful collaboration on radiation responses in plant with an aim to develop/promote it as a human model. Recently I am also involved in mental stress and neurological disorder research using rat model, especially looking into the brain at the omics levels, as part of my official duties. As a research member of the AIST under the team of Dr. Yoshinori Masuo (MST, HTRC, and now at Toho University, Lab of Neuroscience), I was actively involved (since 2007) in sharing my expertise in proteomics technologies with other researchers in the field of life sciences, to promote the use of this “omics” approach for biomarker discovery for mental stress, and others such as breast cancer and lung cancer research; now being progressed further at Toho university and Tokyo university. Following AIST, I joined Showa University School of Medicine, in 2010, as Lecturer, and continue there as Visiting Professor, School of Medicine working on Neuroscience, Brain Stroke, etc., with Doctors and Researchers, and continued on PACAP, Agri-medicine, natural products and supplements and DOHaD project for human health at Hoshi University, currently. At University of Tsukuba, I am actively involved in “omics” analyses of the effects of exercise on the brain, a hot topic for human health research. Also, I am contributing to the field of sports science and medicine; and between India and Japan cooperation on sports. Overall, I am working on use of omics technologies in addressing various biological questions in plants, animal and human models at RLABB, Showa University, Hoshi University and Toho University and University of Tsukuba. Our aim is and remains: to do our best in this chosen field of science. [Finally, in all these efforts, it would be unfair not to mention the total and inspiring dedication and excellent research work from my life and research partner Junko Shibato \(M.Sc. Microbiology\).](#)

I will be forever grateful to Dr. AKIHIRO KUBO (deceased 2015), Senior Researcher, CLIMATE CHANGE, Environmental Biology Division, National Institute for Environmental Studies, 16-2 Onogawa, Tsukuba, Ibaraki 305-8506, JAPAN, for his friendship and support.

MAJOR COLLABORATORS and REFERENCES:

Dr. G.K. AGRAWAL, Associate Director,
ALL FIELDS, SCIENCE & EDUCATION

Research Laboratory for Biotechnology and Biochemistry (RLABB), P. O. Box 13265, Maitidevi, Kathmandu, **NEPAL**.

E-Mail: gkagrawal123@gmail.com

Prof. V.P. AGRAWAL, Director

BIOCHEMISTRY & BIOTECHNOLOGY

Research Laboratory for Biotechnology and Biochemistry (RLABB), GPO Box 8207, Kathmandu, **NEPAL**.

Tel./Fax: +977-1-522900/+977-1-526318

E-Mail: yva@wlink.com.np

Prof. MASAMI YONEKURA, Head

FOOD FUNCTIONALITY

Food Function Laboratory, College of Agriculture, Ibaraki University, Ami 3-21-1, Ibaraki 300-0393, **JAPAN**.

Tel./Fax: +81-29-888-8683

E-Mail: yonekura@ipc.ibaraki.ac.jp

Prof. SHIGERU TAMOGAMI,

APPLIED BIOLOGICAL CHEMISTRY & NATURAL PRODUCTS

Laboratory of Growth Regulation Chemistry, Department of Biological Production, Akita Prefectural University, Akita 010-0195, **JAPAN**.

Tel./Fax: +81-018-872-1637/+81-018-872-1678

E-Mail: tamo_chem.@akita-pu.ac.jp

Dr. SEIJI SHIODA, Ph.D., & Prof.,

ANATOMY & NEUROSCIENCE, AROMATHERAPY

Hoshi University School of Pharmacy and Pharmaceutical Sciences, Global Research Center for Innovative Life Science, Peptide Drug Innovation, 2-4-41 Ebara, Shinagawa, Tokyo 142-8501, **JAPAN**.

Tel./Fax: +81-3-5498-5853

E-Mail: Shioda@hoshi.ac.jp

Dr. NAM-SOO JWA, Ph.D., Prof.

RICE BALST PATHOGEN INTERACTIONS

Department of Molecular Biology, College of Life Science, Sejong University, 98 Kunja-Dong, Kwangjin-Gu, Seoul 143-747, **KOREA**.

Tel./Fax: +82-2-3408-3645/+82-2-3408-3661

E-Mail: nsjwa@sejong.ac.kr

Dr. YOSHIHIRO SHIRAIWA, Ph.D., Prof.

Graduate School of Life and Environmental Sciences

Plant Physiology & Metabolism, Graduate School of Life & Environmental Sciences, University of Tsukuba 1-1-1 Tennodai, Tsukuba, 305-8572, **JAPAN**

E-mail: emilhux@biol.tsukuba.ac.jp

Dr. SHINZO KIMURA, Ph.D., Assoc. Prof.

RISK ASSESSMENT

Associate Professor,

Laboratory of International Epidemiology, Center for International Cooperation, Dokkyo Medical Univeristy, 880 Kitakobayashi, Mibu-machi, Shimotsuga-gun

Tochigi 321-0293, **JAPAN**.

E-mail : kimura@h.jniosh.go.jp

TETSUJI IMANAKA, Assoc. Prof.

RADIATION RESEARCH

Research Reactor Institute

Kyoto University, Kumatori-cho, Osaka 590-0494, **JAPAN**

Dr. Rakwal` s Bio-data

E-mail: imanaka@rri.kyoto-u.ac.jp

Dr. YOSHINORI MASUO, Prof.,

MENTAL STRESS

Laboratory of Neuroscience, Department of Biology, Faculty of Science, Toho University, 2-2-1 Miyama, Funabashi, Chiba 274-8510,

JAPAN.

E-Mail: yoshinori.masuo@bio.sci.toho-u.ac.jp

Dr. HIDEAKI SOYA , Prof.,

EXERCISE and HEALTH

Laboratory of Sports Biochemistry, Institute of Health & Sports Science, University of Tsukuba, Tsukuba, Ibaraki 305-8574, **JAPAN.**

E-Mail: hsoya@taiiku.tsukuba.ac.jp

Dr. TETSUO OGAWA, Ph.D., & Assoc. Prof.

BRAIN RESEARCH and DOHaD Project

Anti-aging Medicine Funded Research Labs, Showa University, School of Medicine, 1-5-8 Hatanodai, Shinagawa, Tokyo 142-8555,

JAPAN.

E-Mail: t.ogawa@med.showa-u.ac.jp

Dr. YASUKAZU YOSHIDA, Ph.D., and Director

HEALTH SCIENCES

Health Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), **JAPAN.**

E-Mail: yoshida-ya@aist.go.jp

Dr. SUN TAE KIM, Ph.D., Assoc. Prof.

BIOTIC STRESS and SECRETOMICS

Department of Plant Bioscience, College of Natural Resources & Life Science, Pusan National University, 50 Cheonghak, Samrangjin, Miryang 627-706,

KOREA.

Tel./Fax: +82-055-350-5505

E-Mail: stkim71@pusan.ac.kr, stkim5505@gmail.com

Dr. DEAWOOK KIM, Ph.D.,

PLANT BREEDING and STRESS and PROTEOMICS

Upland Crop Research Division, The National Institute of Crop Science (NICS), RDA Seodun-dong 151, Gwonseon-gu, Suwon, Gyeonggi-do 441-857, **KOREA.**

E-Mail: dwkim08@korea.kr

Dr. BIRGIT KERSTEN, Ph.D.

BIO-INFORMATICS

Fachgebiet Genomforschung (Department Genome Research), Johann Heinrich von Thünen-Institut (vTI), Bundesforschungsinstitut für Ländliche Räume, Wald und Fischerei - Institut für Forstgenetik (Institute of Forest Genetics) - Sieker Landstr. 2, 22927 Großhansdorf,

GERMANY.

E-mail: birgit.kersten@vti.bund.de

Dr. RUNGAROON WADITEE-SIRISATTHA, Ph.D., Assoc. Prof.

PLANT BIOLOGY

Department of Microbiology, Faculty of Science, Chulalongkorn University, Patumwan, Bangkok 10330, **THAILAND;** Tel: 66-2-2185089, Fax: 66-2-2527576

Dr. Rakwal` s Bio-data

E-Mail: Rungaroon.W@chula.ac.th

Dr. A. RAMESH SUNDAR, Senior Scientist

PLANT PATHOLOGY

Sugarcane Breeding Institute (ICAR), COIMBATORE- INDIA

E-Mail: rameshsundar_sbi@yahoo.co.in

Prof. R.P. SINGH, Emeritus Scientist (ICAR)

MUSHROOM BIOLOGY

Mushroom Research Laboratory, Department of Plant Pathology, School of Agriculture, G. B. Pant University of Agriculture and Technology, Pantnagar 263145, INDIA.

Contact No.- +91 5944 234564 (Office), +91 5944 233312 (Resi.), +91 9411199320 (Mobile)

E-Mail: rp_myco@hotmail.com

Dr. Oliver AH Jones, Ph.D.

METABOLOMICS

School of Applied Sciences, RMIT University, GPO Box 2476V, Melbourne, VIC 3001

AUSTRALIA.

TEL: +61-3-9925-2632, FAX: +61-3-9925-3747;

E-mail: oliver.jones@rmit.edu.au; Metabolomics, Analytical chemistry

Dr. Antonio Massi, Ph.D.

DAFNAE, University of Padova, Legnaro,

ITALY.

FAX: +39-049-827-2929;

Email: Antonio.masi@unipd.it

Dr. Jenny Renaut, Ph.D.

Luxembourg Institute of Science and Technology

“Environmental Research and Innovation” (ERIN) department, 41, rue du Brill, L-4422 Belvaux

LUXEMBOURG

Tel +tel: +352 275 888- 860

Fax +352 275 885

Email: jenny.renaut@list.lu



Signed (2017/12/02, Tsukuba)