

**RAGHUPRAKASH KASTOORI RAMAMURTHY**  
**UNL- Dept. Of Agronomy and Horticulture, 1875 N 38th Street, Lincoln, NE-68583**  
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### **Career Interest**

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To work in a team for an innovative organization where my skills in plant breeding, genetics and genomics can be utilized to genetically improve crops for an environmentally safe and sustainable agriculture.

### **Qualifications summary**

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Ph.D in Genetics and Plant Breeding discipline; Experience in QTL mapping and genetic diversity studies; Hands on experience in RNA-Seq analysis and high performance computing, familiar with GWAS analysis; Proficient with R and SAS programming; Familiar with modern crop genetics/breeding tools such as GBS and different SNP assay chemistries to exploit natural variation.

### **Education**

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2010 July-2013 Dec	Ph.D, Plant Breeding and Genetics, University of Nebraska-Lincoln, Lincoln, NE
2005 Jan- 2006 Dec	M.Sc.(Ag), Acharya N.G. Ranga Agricultural University, Hyderabad, India
2000 Sept-2004 Sept	B.Sc.(Ag), University of Agricultural Sciences, Bangalore, India

### **Professional Preparation**

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Postdoctoral Research Associate (2014 Jan to present): PI: Dr. Brian M. Waters. Dept. of Agronomy and Horticulture, University of Nebraska-Lincoln

- Using genetic, genomic and transcriptomic data, we found evidence for the causal gene that controls iron uptake in melon.
- Hairy root transformation experiments further supported our genomic and transcriptomic results. Currently working on development of stable transgenics for further functional analysis of fefe mutant.
- I am working on a project to understand Fe-Cu interactions in dicot plants using transcriptomic approach, specifically using melon and arabidopsis systems.

Doctoral Research (2010 to 2013): Advisor: Dr Brian M. Waters. Dept. of Agronomy and Horticulture, University of Nebraska-Lincoln

- Dissertation research project on “Genetic mapping of QTLs associated with nutritional and quality traits in melon (*Cucumis melo*. L) and soybean (*Glycine max*. L)”.
- Extensively used molecular markers for different projects.
- Collaborated with soybean breeding group at UNL to use natural variation in soybean for mapping nutritional traits.
- Managed hourly employees on a daily basis and assigned tasks (both in the lab and field).
- Data analysis and management using R, R/qtl and SAS softwares.
- Scientific presentations in various conferences about different research projects and exchange of ideas.

Doctoral research (2009 to 2010): Advisor: Dr Aardra Kachroo, Dept. of Plant Pathology, University of Kentucky, Lexington

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- Acquired practical experience with molecular plant pathological techniques such as Virus induced gene silencing, Virus induced overexpression of plant genes, Molecular cloning, Yeast two hybrid interactions and Northern blotting.

Junior Research Fellowship (2007-2008): PI: Dr. Sivaramakrishnan S, Retd. Prof, Dept. of Ag. Biotech, ANGRAU

- Identified and isolated resistant gene homologs in chilli and egg plant using conserved degenerate primers.
- Tested the use of molecular markers derived from degenerate primers for nematode resistance in chilli.

Marketing officer (Product development) (Jan 2007- Mar 2007): Coramandel Fertilizers Pvt. Ltd

- Had direct interactions with farmers through method demonstrations and educated the farmers about the benefits of using sulfur in different crops.

Masters research (2005-2006): Advisor: Dr. Prashanthi L, Senior scientist, RARS, Tirupathi, ANGRAU

- Evaluated the genetic diversity among fifty lines of guar from various geographical locations in India with respect to yield and quality attributes.
- Studied selection indices for high yield and quality in guar.

Undergrad research assistant (2004): PI: Dr. Shashidhar HE, UAS, Bangalore, India

- Helped graduate students with phenotyping of root traits, planting and crossing in rice.

### **Skills/Specialties**

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- **Classical Breeding**: Selection of parental lines for desired traits, Maintenance of pure lines, Emasculation and pollination in melon, cucumber, rice and chilli, Development of mapping populations and advancing the generations using both field and green house seasons.
- **Programming skills and computer literacy**: Proficient in all Microsoft Office applications, R, R/qtl, SAS, QTL-cartographer, Mapchart, Basic Bioinformatics tools such as Primer 3 and Saccharomyces genome database for primer designing, BLAST for sequence homology studies and Clustal-W for multiple alignment studies, MEGA5 and DNASTAR-Lasergene softwares for sequence analysis.
- **Big data analysis**: Hands on experience working with GWAS, QTL mapping and RNA-seq datasets, proficient with UNIX command line interface to perform different workflows.
- **Molecular biology**: Extraction and purification of DNA, Molecular marker studies, Gel Electrophoresis, Total RNA extraction, Northern blotting, Dot blotting, PCR, RT-PCR, Cloning, Bacterial transformation, Plasmid extraction.
- **Biochemical**: Sample preparation for Inductively Coupled Plasma Mass Spectrophotometry (ICP-MS), Near Infrared Reflectance Spectroscopy, SPAD Chlorophyll meter recording and Specific leaf area data recording, Total soluble sugar determination using Refractometer, Determination of gum content, Viscosity determination using rotoviscometer, Determination of total soluble proteins and carbohydrates.
- **Biotechnology**: Plant Tissue Culture, Hairy root transformation, CRISPR/Cas9 gene editing.

## Publications

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- **Kastoori RR**, Waters BM (2017) Mapping and characterization of the *fefe* gene that controls iron uptake in melon (*Cucumis melo* L.). *Frontiers in Plant Science*, **8**.
  - **Kastoori RR**, Waters BM (2015) Identification of fruit quality and morphology QTLs in melon (*Cucumis melo*) using a population derived from *flexuosus* and *cantalupensis* botanical groups. *Euphytica*, **204** (1): 163-177.
  - **Kastoori RR**, Joseph Jedlickka, George Graef, Brian Waters (2014) Identification of new QTLs for seed mineral, cysteine, and methionine concentrations in soybean [*Glycine max* (L.) Merr.], *Molecular Breeding*, **34** (2): 431-445.
  - **Kastoori RR**, Kiranbabu T, Sivaramakrishnan S, Varaprasad KS, Anuradha G, M. M. (2012). Isolation of resistance gene candidates in chilli and use of molecular markers for root knot nematode resistance. *International journal of plant breeding*, **6** (1): 47–52.
  - **Kastoori RR**, Prasanthi L, Reddysekhar M. (2009) Selection indices in Guar. *The Asian and Australasian Journal of Plant Science and Biotechnology* **3** (1): 26-30.
  - **Kastoori RR**, Prasanthi L, Reddysekhar M. (2008) Genetic divergence studies in Guar (*Cyamopsis tetragonaloba* L.Taub). *Journal of Arid Legumes Research* **5**:75-78.
  - **Kastoori RR**, Prasanthi L, Reddysekhar M. (2008) Genetic variability studies for seed yield, Physiological and Quality Attributes in Guar (*Cyamopsis tetragonaloba* (L.) Taub.). *The Asian and Australasian Journal of Plant Science and Biotechnology* **2**:36-38.
- Genebank submissions:** FJ605100- FJ605109 and GU906978- GU906986

## In preparation:

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- **Kastoori RR**, Qingyuan Xiang, En-Jung Hsieh, Kan Liu, Chi Zhang, Mani kant Choudhary, Brian M. Waters (2017) Transcriptomic characterization of *sp17* and Col-0 ecotypes of *arabidopsis* reveals new aspects of Fe-Cu crosstalk.

## Awards

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- Widaman distinguished graduate student fellowship in recognition of outstanding basic research potential in agriculture (2013).
- Larrick Whitmore travel award, plant and animal genome conference (2013).
- Best poster award for “Improvement of Chilli and Brinjal for Root Knot Nematode Resistance Using Molecular Markers” at International Conference on “Current Trends in Biotechnology and Implications in Agriculture”, Sardar Vallabhai Patel University of Agriculture and Technology, Meerut, UP, India (Feb 19-21, 2009).

## Professional Service:

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- Manuscript reviewer in Crop Science journal, Canadian Journal of Plant Science, Open agriculture (2016) and Biochemical Genetics (2017)
- Invited editorial board member for Biochemical Genetics (2017), Publisher: Springer US
- Served as a reviewer of UCARE research proposals to support undergraduate research at UNL (2015 and 2016).
- Served as a poster judge in Plant Breeding Symposium (2017) at NIC, UNL.

## Other experience

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1. Validated level2 e-authenticated user of Biotechnology Regulatory Services (2013).

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2. Coordinated the first annual plant breeding symposium (member, 2012) and DOW agro science sponsored seminar series (member, 2013) at UNL.
3. Completed Research Fellowship training program on basic techniques in Molecular Biology at ICRISAT, Patancheru, Hyderabad, Telangana (June16-July4, 2008).
4. Practical experience with biological control of plant pathogens in Biocontrol Research Laboratory (Pest Control of India Pvt. Ltd.). (Jan2004- Feb 2004).

## PROFESSIONAL MEMBERSHIPS

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2013- 2016: American Society of Agronomy and Crop Science Society of America

2012 and 2014: American Society of Plant Biologists

## POSTER and ORAL PRESENTATIONS

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1. **Kastoori RR**, Brian M Waters (2015) Mapping the *fefe* gene that controls iron uptake in melon (*Cucumis melo*), UNL Plant Science Retreat, October 14-15, Nebraska City, Nebraska (poster)
2. **Kastoori RR**, Brian M Waters (2015) Mapping a mutant that controls iron uptake in melon (*Cucumis melo*), UNL Plant Science Symposium, Plant Phenomics:from pixels to traits, Nebraska Innovation Campus, October 15-16, Lincoln, Nebraska (poster)
3. **Kastoori RR**, Brian Waters (2014) QTL mapping of fruit quality and morphological traits in melon P06046-C, Annual meeting of American Society of Plant Biologists and Canadian Society of Plant Biologists, July12-16, Portland,Oregon, USA (poster)
4. Brian Waters, Sam McInturf, Keenan Amundsen, **Kastoori RR** (2014) Transcriptomic and physiological characterization of the *fefe* mutant of melon (*Cucumis melo*) reveals new aspects of iron-copper crosstalk, P03025-A, Annual meeting of American Society of Plant Biologists and Canadian Society of Plant Biologists, July12-16, Portland,Oregon, USA (poster)
5. **Kastoori RR** (2013) New QTLs for seed weight, minerals, cysteine and methionine concentrations in soybean.118-7, ASA-CSSA-SSSA meeting, Tampa, Florida, USA (oral)
7. **Kastoori RR**, Brian M Waters (2012) Identification of QTLs associated with iron uptake and carotenoid accumulation in melon (*Cucumis melo*), ASPB mid-west section meeting, Lincoln, Nebraska (poster)
8. **Kastoori RR**, Brian M Waters (2011) Identification of QTLs associated with iron uptake and carotenoid accumulation in melon (*Cucumis melo*), PAG conference, San Diego, California (poster)
9. **Kastoori RR**, Brian M Waters (2011) Identification of QTLs associated with iron uptake and carotenoid accumulation in melon (*Cucumis melo*), Research fair, Lincoln, Nebraska (poster)
10. **Kastoori RR**, Brian M Waters (2011) Identification of QTLs associated with iron uptake and carotenoid accumulation in melon (*Cucumis melo*), NGN retreat, Lincoln, Nebraska (poster)
11. **Kastoori RR** (2011) Genetic mapping of the quantitative trait loci associated with nutritional and quality traits in melon (*Cucumis melo*.L) and soybean (*Glycine max*.L) (Dept. seminar)
12. **Kastoori RR**, Brian M Waters (2010) Identification of QTLs associated with iron uptake and carotenoid accumulation in melon (*Cucumis melo*), Plant science retreat, Nebraska City (poster)
13. **Kastoori RR**, Kachroo A (2009) "Molecular components involved in systemic acquired resistance". College of Agriculture, University of Kentucky, USA.(Dept. seminar)

**References:**

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