



**National Agri-Food Biotechnology Institute (NABI)**  
**(Dept. of Biotechnology, Ministry of Science & Technology, Govt. of India)**  
**Sector-81, Knowledge City, Manauli P.O, S.A.S. Nagar-140306, Punjab, India.**  
**Website: [www.nabi.res.in](http://www.nabi.res.in)**

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**Walk In Interview for the temporary Positions of Senior Research Fellow & Junior Research Fellows**

National Agri-Food Biotechnology Institute (NABI) is an autonomous Institute under Department of Biotechnology, Government of India. NABI aims at catalysing the transformation of Agri-food sector in India by being a nodal organization for knowledge generation and translational science leading to value-added products based on Agri-Food biotech innovations for improved household nutritional security. Since its inception in 2010, NABI is involved in research activities for the Bio fortification, development of designer crops for improved nutrition, providing sustainable and novel solutions towards quality food and nutrition, and development of evidence based functional foods to counter malnutrition. Food and nutritional Biotechnology division at NABI requires following research personnel purely on temporary basis.

**1. Junior Research Fellow (Own Fellowship) (Two Positions)**

**Essential Qualifications:-**

Post Graduate Degree in Basic Science OR Graduate /Post Graduate Degree in professional course selected through a process described through any one of the following:-

Scholars who are selected through National Eligibility Tests-CSIR-UGC-NET including Lectureship (Assistant Professorship) and GATE

The selection process through National Level examinations conducted by central government departments and their agencies and institutions such as DST,DBT,DAE,DOS,DRDO,MHRD,ICAR,ICMR,IIT,IISc,IISER etc.

### **Principal Investigator**

Dr. Ravindra Pal Singh, Ramalingaswami Fellow, NABI

### **Desired Experience:-**

Experience with microbiological or biochemical and/or molecular techniques.

### **Emoluments :-**

As per fellowship granting agency.

### **Responsibilities:-**

Conducting molecular biology and biochemical experiments.

2. **Name of project: High resolution QTL mapping for iron (Fe), zinc (Zn), grain protein, and phytate content and their introgression in high yielding wheat cultivars**

### **Name of Project Coordinator:-**

Dr. T. R. Sharma, Executive Director.  
National Agri-Food Biotechnology Institute (NABI)

### **Name of Principal Investigator:-**

Dr. Joy K. Roy, Scientist-F  
National Agri-Food Biotechnology Institute (Mohali)

### **Research Positions (Temporary):-**

Senior Research Fellow (SRF) & Junior Research Fellow (JRF)

### **Duration:-**

Till March, 2022)

### **Project summary:-**

This is a NABI's flagship program, which is funded by Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India. The network project "Development of Bio-fortified and Protein-rich Wheat" will be executed in collaboration among seven networkpartners. The project will include i) evaluation of wheat germplasm for Fe, Zn, folate, and grain protein content, starch quality and antinutritional factors, ii) Validation and characterization of available genes/QTLs/markers for micronutrients, iii) Development of mapping populations (F2, RILs, NILs, BCs) for genetic analysis, iv) Development of high density linkage maps and QTL maps using high throughput SNPs, v) Epistatic interactions (QTLxQTL, QTL x environment) analysis, and vi) development of wheat varieties with enhanced micronutrient content and enhanced bioavailability and bio-accessibility.

**Manpower:-** Senior Research Fellow (SRF) **01 Position**

**Qualification:-** Post graduate degree in Basic Science Or Graduate/Post Graduate in professional course selected through a process described through any one of the following

- a) Scholars are selected through National Eligibility Tests-CSIR UGC NET including Lectureship (Assistant Professorship) and GATE.
- b) The selection process through National level examinations conducted by Central Government Departments and their agencies and institutions such as DST, DBT, DAE, DOS, DRDO, MHRD, ICAR, ICMR, IIT, IISc, IISER etc.

Emoluments and eligibility is as per DST OM SR/S9/Z-08/2018 dated 30th January, 2019

**Essential qualification:-** Qualification prescribed for JRF with two years of research experience.

**Desired Qualifications:-** Research training in molecular breeding, DNA based molecular marker development, linkage mapping, QTL mapping, mapping population development (RIL, F2, backcross); experience in microarrays and SNP chips, next gen sequencing and data analysis

**Emoluments:-** 35,000/-PM+16% HRA

**Responsibilities:-** Crossing for development of pre-breeding and biparental mapping populations for high iron, zinc, low phytate and grain protein content in wheat; development of association mapping panel in wheat for high iron, zinc, low phytate; DNA and RNA extraction; PCR reaction, SSR and SNP genotyping; phenotyping of micronutrients in wheat; qRT-PCR and sequencing; Off-season growing of plants in green house and plant growth chambers and at off-season stations in HP; multi-location field experiments; biochemical analysis; molecular biology works, large scale population analysis, etc.

**Age:** 32 years (Relaxation is admissible in case of SC/ST/OBC/PD and women candidates as per GOI instructions)

**Manpower:-** Junior Research Fellow (JRF) **01 Position**

**Essential Qualification:-** Post graduate degree in Basic Science Or Graduate/Post Graduate in professional course selected through a process described through any one of the following

- a) Scholars are selected through National Eligibility Tests-CSIR UGC NET including Lectureship (Assistant Professorship) and GATE.
- b) The selection process through National level examinations conducted by Central Government Departments and their agencies and institutions such as DST, DBT, DAE, DOS, DRDO, MHRD, ICAR, ICMR, IIT, IISc, IISER etc.

Emoluments and eligibility is as per DST OM SR/S9/Z-08/2018 dated 30th January, 2019

**Desired Qualifications:-** Research training in molecular breeding, DNA-based molecular marker development, linkage mapping, QTL mapping, mapping population development (RIL, F2, backcross).

**Emoluments:-** 31,000/-PM+16% HRA

**Responsibilities:-** Crossing for development of pre-breeding and biparental mapping populations for high iron, zinc, low phytate and grain protein content in wheat; development of association mapping panel in wheat for high iron, zinc, low phytate; DNA and RNA extraction; PCR reaction, SSR and SNP genotyping; phenotyping of micronutrients in wheat; qRT-PCR and sequencing; Off-season growing of plants in green house and plant growth chambers and at off-season stations in HP; multi-location field experiments; biochemical analysis; molecular biology works, large scale population analysis, etc.

**Age:** 28 years (Relaxation is admissible in case of SC/ST/OBC/PD and women candidates as per GOI instructions)

3. **Project Title:** "Genome-wide mapping of QTL controlling healthy amylose starch variation in wheat"

**Principle Investigator:** Dr. Joy Kumar Roy, Scientist-F

**Positions:** Junior Research Fellow (01)

**Duration:** Till September 11, 2021

**Project summary:** High density linkage maps and QTL maps showing QTL regions controlling amylose and resistant starch variation shall be developed in wheat. More than 10 high amylose (amylose content >50% in wheat grain) mutant lines have been developed in the genetic background of a good chapatti variety, 'C 306' through EMS mutagenesis. Few high amylose mutant lines (>65% amylose content) have been crossed with the present high yield variety, 'WH 1105' and a F2 population comprising are growing and F3 seeds will be harvested in April 2018. This population will be advanced to develop recombinant inbred line (RIL) population and backcross population will be advanced to make near isogenic lines (NILs). The advance generation of mapping population will be used for QTL mapping. The genotyping will be done using wheat SNPchips or microarrays and microsatellites. It will also include epistatic interactions such as QTL x QTL, QTL x environment interactions.

### **Junior Research Fellow (JRF)**

#### **Research work responsibility:**

1. Development of RIL and NIL populations.
2. Measurement and analysis of starch and amylose content and properties
3. Evaluation of mapping populations at multi-locations
4. Genotyping of mapping populations using microsatellites and SNPs
5. Data analysis such as construction of linkage maps, QTL mapping, QTL x environment interaction study

**Qualification:-** Post graduate degree in Basic Science Or Graduate/Post Graduate in professional course selected through a process described through any one of the following

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- b) The selection process through National level examinations conducted by Central Government Departments and their agencies and institutions such as DST, DBT, DAE, DOS, DRDO, MHRD, ICAR, ICMR, IIT, IISc, IISER etc.

Emoluments and eligibility is as per DST OM SR/S9/Z-08/2018 dated 30th January, 2019

**Desirable qualifications:**

Research training or experience in molecular breeding, DNA-based molecular marker development, linkage mapping, QTL mapping, mapping population development (RIL, F2, backcross); experience in microarrays and SNPchips, nextgen sequencing data analysis;

**Age:** 28 years (Relaxation is admissible in case of SC/ST/OBC/PD and women candidates as per GOI instructions)

**Emoluments:** Rs. 31000/- per month Plus HRA.

4. **Project Title: "Metabolic engineering of triacylglycerol (TAG) biosynthetic pathway to enhance the nutritional quality of forage sorghum and rumen protection of dietary lipids"**

**Principle Investigator:** Dr. Rupam Kumar Bhunia, Inspire Faculty

**Positions:** Junior Research Fellow (01)

**Duration:** Till December 16, 2022

**Project summary:**

The natural occurrence of cysteine (Cys) in the amphipathic arms of oleosin (oil seed structural protein) appears to be either non-existent or extremely rare. Hence, we aim to generate novel Cys-oleosin proteins with disulfide bonds by engineering one and six Cys residues into each amphipathic arm. Finally, by co-expressing diacylglycerol O-acyltransferase (DGAT) and Cys-oleosin variant, we propose to substantially enhance the energy content of forage sorghum through the accumulation of TAG in stable organelles. Furthermore, the co-expression will eventually lead to increased protection of TAG products against rumen microbial lipases.

The successful application of this proposed research in forage sorghum for TAG accumulation and protection in vegetative tissues will allow livestock animal specifically dairy cattles to get energy supplement directly from forage along with protected lipid products from ruminal lipase attacks.

### **Research work responsibility:-**

The project involves biochemical characterization of the neutral lipid metabolic pathway genes, generation of transgenic to enhance the lipid accumulation in vegetative tissues, Molecular analysis of transgenic plants and quantification of different lipids (membrane lipids and triglycerides) by GC and GC-MS.

**Qualification:-** Post graduate degree in Basic Science Or Graduate/Post Graduate in professional course selected through a process described through any one of the following

- c) Scholars are selected through National Eligibility Tests-CSIR UGC NET including Lectureship (Assistant Professorship) and GATE.
- d) The selection process through National level examinations conducted by Central Government Departments and their agencies and institutions such as DST, DBT,DAE,DOS,DRDO,MHRD,ICAR,ICMR,IIT,IISc,IISER etc.

Emoluments and eligibility is as per DST OM SR/S9/Z-08/2018 dated 30th January, 2019

**Desirable qualifications:** Research training or experience in plant lipids biochemistry will get preference.

**Age:** 28 years (Relaxation is admissible in case of SC/ST/OBC/PD and women candidates as per GOI instructions)

**Emoluments:** Rs. 31000/- per month Plus HRA.

5. **Project Title:** "Development of Glycoconjugates based site directed fluorescent sensor for the detection of bacteria"

**Principle Investigator:** Dr. Nitin Kumar Singhal, Scientist D

**Positions:** Junior Research Fellow (01)

**Duration:** Till 25<sup>th</sup> November, 2022.

### **Project summary:**

In this project, we will develop gold nanoparticles fluorescent silica core-shell (GFCS) as scaffolds to anchor multivalent glycans and establish a model system for the quantitative study of the multivalent binding between glycan functionalized GFCS and bacteria. GFCS will readily synthesized by mixing gold nanoparticles, porphyrin containing silicon alkoxide, TEOS and APTES in ammonia water. Enclosure of TCPP in a silica matrix exhibit longitudinal surface plasmon resonance (LSPR), which is forsaken via radiative and non-radiative channels. The nonradiative removal of the GFCS endow them to absorb light effectively and release heat into the vicinity. Taken together, GFCS endow microscopic and

spectroscopic detection and quantification of the binding event, and they will be used for photothermal killing of bacteria. We will first confirm the multivalency effect of glycan modified GFCS with lectin binding assay. Glycan microarray will be also developed after all confirming the role in GFCS in bacterial detection and ablation. This combination of glycans and nanoparticles will be a promising platform for fast and efficient detection and ablation of bacteria.

**Research work responsibility:**

This project involves nanoparticle synthesis, fabrication and bacterial work. Candidate should have some basic knowledge in one of the area.

**Qualification:-** Post graduate degree in Basic Science Or Graduate/Post Graduate in professional course selected through a process described through any one of the following

- e) Scholars are selected through National Eligibility Tests-CSIR UGC NET including Lectureship (Assistant Professorship) and GATE.
- f) The selection process through National level examinations conducted by Central Government Departments and their agencies and institutions such as DST, DBT,DAE,DOS,DRDO,MHRD,ICAR,ICMR,IIT,IISc,IISER etc.

Emoluments and eligibility is as per DST OM SR/S9/Z-08/2018 dated 30th January, 2019

**Desirable qualifications:** Organic synthesis work experience will be considered as a plus.

**Age:** 28 years (Relaxation is admissible in case of SC/ST/OBC/PD and women candidates as per GOI instructions)

**Emoluments:** Rs. 31000/- per month Plus HRA.

**Application and Selection Process:-**

All interested candidates may appear for Walk-In Interview at National Agri-Food Biotechnology Institute (NABI) located at Knowledge City Sector-81, Mohali 140306 on **09<sup>th</sup> January, 2020 (Thursday) at 0900 hrs along-with duly filled Application form (Mandatory)** available on the website [www.nabi.res.in](http://www.nabi.res.in). The duly filled application form must be submitted at the time of registration at NABI from **09:00 hrs to 10:00 hrs on above mentioned date and time.** The candidates must ascertain their eligibility before applying; as ineligible candidates will not be interviewed. All the candidates are requested to appear for the interview with full CV, thesis/project report, publications and original degree certificates and transcripts. No TA/DA will be paid for appearing in the interview. Canvassing in any form or bringing influence, political or otherwise, will lead to disqualification of the candidate(s).