

# **Sri Ramachandra Institute of Higher Education and Research**

## **Department of Microbiology**

The Mycology division of the department of Microbiology, Sri Ramachandra Institute of Higher Education and Research is pleased to announce the admission to Fellowship programme in “**Medical Mycology**”

### **Course Details:**

1. Fellowship in Medical Mycology:

Qualification: : Post MD (Microbiology)/ DNB (Microbiology), MD (Lab Medicine) MSc (Medical Microbiology)

Number of seats: 2 (June15 – Jan 15)

Course Duration: 6 months

Course Fee: Rs. 45,000 ( Forty Fifty Thousand Only)

Stipend: Non –Stipend

Training timings: 8.00am to 4.00pm

Attendance requirement for examination: 90%

Those interested may kindly submit their CV and application form to the below address

**The Medical Director**

Sri Ramachandra Medical Centre

Porur, Chennai-116

Ph: 044-45928552 (8-4pm)

**(OR)**

**Dr Anupma Jyoti Kindo,**

Professor & Head of the Department,

Department of Microbiology

Sri Ramachandra Medical College & Research

Institute, Porur, Chennai- 600116.

Ph: 9445239196, 9884839196

Website: [www.sriramachandra.edu.in](http://www.sriramachandra.edu.in)

Email: [medicaldirector@sriramachandra.edu.in](mailto:medicaldirector@sriramachandra.edu.in) / [microsrmc@gmail.com](mailto:microsrmc@gmail.com)

**\* The dates of the interview will be announced at the time of due course**

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**Curriculum for fellowship in Medical Mycology**  
**Department of Microbiology**  
**Sri Ramachandra Medical College and Research Institute**



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# 1. Course Overview

## Introduction

The incidence of fungal infections and their invasiveness has increased recently due to several underlying factors like rise in the immunocompromised states, greater use of broad spectrum antimicrobial agents etc. Such invasive nature of the fungi can lead to increased morbidity and mortality. Also there is an up rise in newer fungi causing infections in the recent years, which contributes to the delay in the diagnosis. This may be due to lack of awareness among the physicians and the clinical microbiologist about their causative role in fungal infections. There is also a change in trend in the antifungal susceptibility pattern among the commonly isolated fungi. Despite the huge burden and high mortality rates, fungal infections remain understudied compared with other infectious diseases and there is a pressing need for more research in this field. Hence this course was mainly designed to fill the lacunae and meet the need of the students in the field of Mycology and provoke their interest in research. This course mainly aims to provide a wide knowledge about the fungal infections along with their rapid methods of diagnosis and their antifungal susceptibility patterns.

**Aim:** The aim of the fellowship program in Medical Mycology is to provide basic and advanced training in the field of Mycology to enable the medical graduates and postgraduates to set up their own laboratory for fungal diagnostics and research.

**Goals:** Medical Mycology Fellowship program will provide training in diagnostic mycology, teaching and research. Upon completion, the trainee will have acquired the knowledge and Technical skills to diagnose fungal infections and understand the principles and practice of evidence based- Mycology.

## Objectives:

### Knowledge

At the end of the training programme the student should be able

- To describe the morphological features of fungi, classification, fungal reproduction, growth & nutrition
- To discuss the different direct microscopic techniques, fungal stains and culture media for the identification of fungi and choose the appropriate culture media for fungal culture and storage.

- To enumerate the etiological agents causing superficial, subcutaneous, systemic and opportunistic fungal infection and discuss in detail about their aetiology, pathogenesis, laboratory diagnosis and treatment.
- To list the causative fungi based on syndromic approach (Oculomycosis, Otomycosis, Hyalohyphomycosis, Fungal sinusitis, Onychomycosis, Allergic fungal diseases, Mycotoxicosis, Adiaspiromycosis, Pythiosis, Protothecosis, CNS infections etc.) and discuss the pathogenesis, laboratory diagnosis and treatment.
- To discuss the principle and applications of molecular methods that are available for the diagnosis of fungi
- To classify the antifungal agents and discuss in detail about the mechanism of action, indications & contraindications, antifungal resistance mechanisms, *In vitro* antifungal susceptibility testing methods

### **Skill**

At the end of the training programme the student should be able

- To prepare and perform various staining techniques ( KOH mount, Lactophenol cotton blue mount, India Ink preparation, Nigrosin stain, Calcofluor white stain, Diazonium blue B stain, Haematoxylin & Eosin stain, Periodic acid- Schiff stain, Giemsa stain, Grocott-Gomori's methenamine silver stain, Mayer's Mucicarmine stain, etc.)
- To prepare and choose appropriate medium (basal and special medium) for identification of fungi.
- To perform and interpret routine mycological techniques – sugar assimilation and fermentation techniques, Germ tube test, Hair perforation test, Hair bait technique, fungal slide culture, Dalmau technique, water culture, banana peel culture, cryptococcal latex agglutination test, Galactomannan assay, etc.
- To perform and demonstrate the virulence factors of yeast and moulds (Biofilm formation- Test tube method, MTT assay, Esterase, Proteinase, Phospholipase, Haemolytic activity).
- To perform and report molecular techniques for fungal identification - ITS1 & ITS4 PCR, PCR- RFLP, IGS1 PCR, *Trichosporon* genus specific & *Trichosporon asahii* specific PCR, RAPD.

- To perform antifungal susceptibility techniques and interpret the susceptibility pattern and/ or MIC values for yeast and mould using appropriate methods (Disc diffusion, broth microdilution method & E test as per CLSI guidelines).

### **Attitude**

- Demonstrate an enthusiastic and positive approach to learning
- Show good communication skills and the capacity to liaise
- Make oral presentations to specialist and non-specialist academic audiences participating effectively within such contexts
- Approach their own professional development through planning, monitoring, critical reflection and evaluation.
- Manage time effectively and prioritise tasks appropriately whilst working independently or as part of a team.

### **Course details**

**Eligibility:** Post MD (Microbiology)/ DNB (Microbiology), MD (Lab Medicine) MSc (Medical Microbiology), MSc MLT.

**Duration:** 6 months

**Method of selection:** Written & oral examination

**No of seats:** Two

## 2. COURSE CONTENTS

Since the fellows are trained with the aim of setting up their own laboratory for diagnosis of fungal infections and incite their interest in research, the course is designed to meet the needs in theoretical, practical and clinical aspects of Mycology.

### Knowledge

#### A) Basics in Mycology

- Fungal characteristics : morphological features, Cell structure, reproduction in fungi, growth & nutrition, fungal dimorphism
- Taxonomy of fungi
- Mechanism of immunity in fungal infections
- Specimen collection and transport for diagnosis of fungal diseases
- Fungal staining methods and culture media

#### B) Fungal infections

##### 1. Superficial mycoses

- Malassezia infections
- Tinea nigra
- Piedra
- Dermatophytoses

##### 2. Sub cutaneous mycoses

- Mycetoma
- Sporotrichosis
- Chromoblastomycosis
- Phaeohyphomycosis
- Rhinosporidiosis
- Lobomycosis

##### 3. Systemic Mycoses

- Histoplasmosis
- Blastomycosis
- Coccidioidomycosis
- Paracoccidioidomycosis

#### 4. Opportunistic mycoses

- Candidiasis
- Cryptococcosis
- Pneumocystosis
- Pencilliosis
- Aspergillosis
- Zygomycosis
- Other opportunistic mycoses

#### **C) Clinical syndromes**

- Oculomycosis
- Otomycosis
- Hyalohyphomycosis
- Fungal sinusitis
- Onychomycosis
- Allergic fungal diseases
- Mycotoxicosis
- Adiaspiromycosis
- Pythiosis
- Protothecosis
- CNS infections

#### **D) Molecular methods**

- Molecular approaches to the diagnosis of infections
- Amplification-based techniques; design, practice and application
- Traditional and developing sequencing technology
- Molecular typing methods

#### **E) Antifungal susceptibility testing**

- Antifungal agents
- Antifungal resistance mechanism
- Antifungal susceptibility testing methods (Disc diffusion, Broth microdilution, Broth macrodilution, E test)

### 3. Techniques/ Skills

- A. Staining techniques : General stains, Special stains, Flourescent stains, Histopathological stains
- B. Fungal Culture media preparation: Basal and special media
- C. Mycological techniques: Sugar assimilation and fermentation techniques, Germ tube test, Hair perforation test, Hair bait technique, Fungal Slide Culture, Dalmau technique, water culture, banana peel culture, cryptococcal latex agglutination test, Galactomannan assay, etc.
- D. Handling & Processing of sample and inoculation techniques.
- E. Identification of yeast and moulds
- F. Virulence factors testing : Biofilm formation- Test tube method, MTT assay, Esterase, Proteinase, Phospholipase, Haemolytic activity.
- G. Molecular techniques: ITS1 & ITS4 PCR, PCR- RFLP, IGS1 PCR, *Trichosporon* genus specific & *Trichosporon asahii* specific PCR, RAPD.
- H. Antifungal susceptibility testing methods: Disc diffusion, E test, broth microdilution method by CLSI method and MTT assay.



## **4. Teaching learning methods and activities**

Learning will be Lecture based & self-directed and will take place as a continuous process.

### **Education / Training**

- Teaching skills: Lectures and Tutorials
- Participatory and small group learning skill

### **Self-Directed Learning**

- Learning need assessment, literature search, evaluating evidence

### **Academic session**

In addition to attending all the academic sessions, the candidate needs to make a minimum number of presentations in these academic sessions during the training period of 6 months

### Presentations Frequency

- a. Seminars / Symposia 1 per month
- b. Journal club 1 per month
- c. Culture seminar 1 per month
- d. Case based learning 1 per month

### Conference, CME and Workshop

During the six month training period he/she should attend at least

- One State / National Conference
- One CME Programme
- Should present a paper in the conference

### **LOG BOOK**

Log book for evaluation of the following

- Collection and handling of specimens
- Identification fungi
- Molecular techniques
- Antifungal susceptibility testing
- Clinical syndrome based approach
- Teaching proficiency
- Attendance and availability
- Enthusiasm and responsiveness

## **Research project**

Every Fellow trainee will be required to carry out one short research project over the period of 6 months under the supervision of his/her guide as identified by the department. The project should be completed one month before the stipulated date of completion of the Fellowship course.

## **5. Recommended books and journals**

### **References**

- De Hoog G.S, Guarro. J, Gene. J, Figueras., Atlas of Clinical Fungi, 2000, 2<sup>nd</sup> edition
- Gary S.moore, Douglas m.jacklow., Mycology for Clinical Laboratory.
- John Willard Rippon., Medical Mycology: The pathogenic fungi and the pathogenic Actinomycetes.
- Kwon – Chung KJ, John E Bennett., Medical Mycology
- Mandell, Douglas, Bennett., Principles and Practice of Infectious diseases, 7<sup>th</sup> edition
- Topley and Wilson's Microbiology and Microbial Infections, 10<sup>th</sup> edition
- Practical and Medical Mycology Manual, SRMC & RI

### **Journals**

- Mycoses
- Journal of Medical Mycology
- Medical Mycology Case reports
- Mycopathologia

**Note:** Books and Journals mentioned above are suggestive. Students can refer to any other books and Journals. Refer to the most recent edition of the books and Journals

## **6. Examination and Certification**

**Formative assessment:** Log book maintenance, Practical and reporting skills, Case based discussions, Performance in Journal Club, Presentation in conference

**Summative assessment:** Theory, Viva-voce & Practical examination will be conducted at the end of the training programme

**Certification:** Certificate will be issued at the end of successful completion of the course.



**SRI RAMACHANDRA MEDICAL CENTRE**

Porur, Chennai - 600 116.

**APPLICATION FORM FOR “FELLOWSHIP IN MEDICAL MYCOLOGY ” 2019-20 Session**

Affix your latest  
colour Passport  
size photograph  
here.

(**Note:** Please fill in each column in your own handwriting and put a tick mark (✓) wherever necessary and strike off the portion not applicable. Incomplete application form will not be accepted).

1. a) Name of the candidate (AS PER PROVISIONAL / DEGREE CERTIFICATE IN BLOCK LETTERS)	:	
b) Expand the initials	:	
c) Complete address (with District, State & PIN CODE) to which communication is to be sent	:	
d) Phone No. with STD Code	:	Residence : Mobile : E-mail ID :
2. a) Father's Name Contact Details	: :	Mobile : E-mail ID :
b) Mother's Name Contact Details	: :	Mobile : E-mail ID :
c) Husband's Name Contact Details	: :	Mobile : E-mail ID :
3. Sex	:	Male <input type="checkbox"/> Female <input type="checkbox"/>

4. a) Date of birth and age	:	DD/MM/YYYY	Age:
b) Place of birth, District and State	:		
5. Qualifying examination passed. (Self attested Photocopy of the Degree certificate and Statement of Marks of all examinations to be enclosed)	:	Name of PG Degree : University Regn. No : Month : Year :	
6. a) Name and address of the Medical College where qualified	:	UG..... .....  PG ..... .....	
b) Whether the College and course is * ecognized by the Medical Council of India.	:	<input type="checkbox"/> Recognised	<input type="checkbox"/> Non Recongnised

7. a) Papers Presented :

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b) Papers Published :

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(if necessary attach separate sheet)

8. a) Whether the candidate has passed all the examinations in the first attempt	:	PG : MBBS:	Yes / No Yes / No						
b) If no, how many attempts were made to pass	:	<table border="1"> <thead> <tr> <th>Course</th> <th>No. of attempts</th> </tr> </thead> <tbody> <tr> <td>MBBS</td> <td></td> </tr> <tr> <td>PG</td> <td></td> </tr> </tbody> </table>		Course	No. of attempts	MBBS		PG	
Course	No. of attempts								
MBBS									
PG									
9. Details of Permanent Registration with the Medical Council incorporating PG qualification (Photocopy to be enclosed)	:	State :							
		Regn. No.:							
		Date :							

### **DECLARATION BY THE CANDIDATE**

I declare that the information furnished by me herein are true and correct. In case any information furnished herein is found to be incorrect or any document is found to be not genuine, I agree to forego my claim for admission and abide by the decision of the Sri Ramachandra Medical Centre authorities.

I further declare that I have read the prospectus furnished with the application form fully and understood the contents therein clearly and I hereby undertake to abide by the conditions prescribed therein. I undertake to abide by the Rules and Regulation of Sri Ramachandra Medical Centre.

Place:

Signature of the Candidate

Date:

Name:

Submit online Application(with attachemnts) to

The Medical Director, Sri Ramachandra Medical Centre, Porur, Chennai-600116.  
[medicaldirector@sriramachandra.edu.in](mailto:medicaldirector@sriramachandra.edu.in)

with copies marked to

[microsrmc@gmail.com](mailto:microsrmc@gmail.com)  
[deanoffaculties@sriramachandra.edu.in](mailto:deanoffaculties@sriramachandra.edu.in)  
[vicechancellor@sriramachandra.edu.in](mailto:vicechancellor@sriramachandra.edu.in)  
[registrar@sriramachandra.edu.in](mailto:registrar@sriramachandra.edu.in)