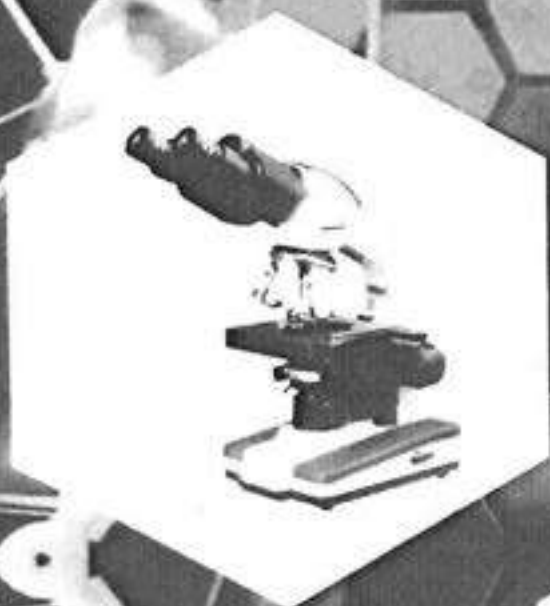


# Methods and Tools in Biosciences



**Editors**  
**Dr. Anita Gajraj**  
**Dr. Reema Srivastava**

*Seema*  
**Principal**

**Kanoria PG Mahila Mahavidyalaya**  
**JAJPUR**



# **Methods and Tools in Biosciences**

**Editors**

**Dr. Anita Gajraj  
Dr. Reema Srivastava**

*Published by*

**Centre for Advanced Research and Development**

Jaipur, Rajasthan, INDIA

Email: card\_rajasthan@yahoo.com

*Seem*  
Principal  
Kanoria PG Mahila Mahavidyalaya  
JAIPUR

Published by:

**Centre for Advanced Research and Development**

Jaipur, Rajasthan, INDIA

Email: card\_rajasthan@yahoo.com

© 2019 Authors

I.S.B.N.: 978-93-5351-601-7

Printed in India 2019

All Right Reserved. No part of this publication may be stored in a retrieval system, transmitted or reproduced in any way, including but not limited to photocopy, photograph, magnetic or any other record, without the prior agreement and written permission of the authors.

Laser typeset by : Nitin Nirwan

Printed by : Ruchika Creation, Jaipur

# 0141-4043430

Suggested Citation :

Gajraj, A. and Srivastava, R. (Eds.) Methods and Tools in BioSciences.  
Published by: Centre for Advanced Research and Development.

Price: ₹ 450/-

*Seenu*  
Principal  
Kanoria PG Mahavidyalaya  
JAIPUR

## Contents

S. No.	Title and Author(s)	Page No.
1	<b><i>Agrobacterium rhizogenes</i> – A Natural Plant Genetic Engineer : Characteristics and Applications</b> <i>Mehrun Nisha Khanam and Mohammad Anis</i>	1-11
2	<b>Introduction, Principle, Instrumentation and Application of SDS-PAGE Technique</b> <i>Reema Srivastava, Bhavya and Sakshi Singh</i>	12-20
3	<b>Lipid Analysis, Techniques and Estimation Procedures</b> <i>Aparna B. Rathore</i>	21-44
4	<b>Micrometry : A Technique to Measure the Dimensions of Microscopic Structures</b> <i>Anita Gajraj and Ratna Saxena</i>	45-51
5	<b>Microtomy – An <i>In Vitro</i> Technique for Histological Observation</b> <i>Jai Bahadur Singh Kachhawa and Anita Gajraj</i>	52-71
6	<b>Polymerase Chain Reaction: An Overview</b> <i>Anu Shrivastav</i>	72-82
7	<b>Screening methods for <i>In Vitro</i> Antimicrobial Activity Evaluation</b> <i>Swati Tyagi</i>	83-90
8	<b><i>Spirulina</i> – Cultivation Technique</b> <i>Ritu Jain and Puneet K. Parashar</i>	91-94
9	<b>Techniques of Fungal Cultivation</b> <i>Sunita Chauhan</i>	95-103

*Seenu*  
Principal  
Kanhoria PG Mahila Mahavidyalaya  
JAIPUR

# Micrometry : A Technique to Measure the Dimensions of Microscopic Structures

Anita Gajraj\* and Ratna Saxena

Department of Zoology, Kanoria PG Mahila Mahavidyalay, J.L.N. Marg, Jaipur

\*Corresponding author : Dr. Anita Gajraj (Assistant Professor, Department of Zoology, Kanoria PG Mahila Mahavidyalay, J.L.N. Marg, Jaipur) ; Email : anita\_gajraj@yahoo.co.in

## Abstract

Micrometry, the measurement of cells/things seen through a microscope, is important for investigators across a number of disciplines. It is important to know the size of cells/things being viewed and investigated so comparisons can be made. Biologists, geologists and a number of others in diverse areas that use microscopy as a tool have to be able to assess dimensions of, say, microorganisms or crystal inclusions. The present article is an attempt to provide sufficient information on micrometry as an easy and informative read. It will be beneficial for those researchers who are willing to study histological observations.

**Keywords :** Micrometry, stage micrometer, ocular micrometer, calibration

## 1. Introduction

Micrometry is the science in which we have some measurement of the dimensions of an object being observed under the microscope. The method employs some special types of measuring devices which are so oriented that these can well be attached to or put into the microscope and observed (Lewin, 1965). The first reported measurements performed with an optical microscope were undertaken in the late 1600s by the Dutch scientist Antonie van Leeuwenhoek, who used fine grains of sand as a gauge to determine the size of human erythrocytes (Matthew *et al.*, 1800) Since then, countless approaches have been employed for

measuring linear, area, and volume specimen dimensions with the microscope (a practice known as **micrometry** or **morphometrics**), and a wide variety of useful techniques have emerged over the past few hundred years.

All measurements of length are based on a comparison of the object under scrutiny with another of known dimensions, or with a standardized, calibrated scale (Quesnel, 1971). In order to determine the length or width of a wooden board, for example, a ruler or measuring tape is placed in contact with the board and the dimensions are noted by direct comparison to the graduated numerical markings on the ruler.

*Seem*  
Principal