

DEPARTMENT OF BIOTECHNOLOGY

REPORT ON

“DNA Sequencing”

by

**Dr. Stefan Thalhammer, Founder and CSO, Senray
Technologies, Munich Germany**

24-APRIL-2023

“DNA Sequencing”

by

Dr. Stefan Thalhammer, Founder and CSO, Senray Technologies, Munich
Germany

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PROGRAM BROCHURE



SRI VENKATESWARA COLLEGE OF ENGINEERING

(An Autonomous Institution – Affiliated to Anna University, Chennai)
Sriperumbudur Tk – 602 117, Tamil Nadu



INSTITUTION'S
INNOVATION
COUNCIL
(Ministry of HRD Initiative)

Department of Biotechnology
&
BioAcademy



Consciousness for Quality

Solicit your esteemed presence for an **Guest Lecture**
on

“DNA sequencing”

by



Dr. Stefan Thalhammer
Founder and CSO
Senray Technologies,
Munich Germany

ALL ARE CORDIALLY INVITED

Venue : **Google Meet** (<https://meet.google.com/uic-phww-zdt>)

Date : 24th April 2023 (Monday)

Time : 1:30 to 02:30 PM (IST)

Conveners

Prof. M. Sivanandham
Secretary, SVEHT

Prof. E. Nakkeeran
HoD-BIO

Organizing Secretary

Mr. N. Sathish
AP-BIO

Coordinators

Dr. K. Ganesh Prasath
AP-BIO

Mr. J.G. Aswin Jenö
AP-BIO

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DEPARTMENT OF BIOTECHNOLOGY

REPORT ON THE GUEST LECTURE ON “DNA SEQUENCING”

BY

**DR. STEFAN THALHAMMER, FOUNDER AND CSO, SENRAY TECHNOLOGIES,
MUNICH GERMANY**

24-APRIL-2023

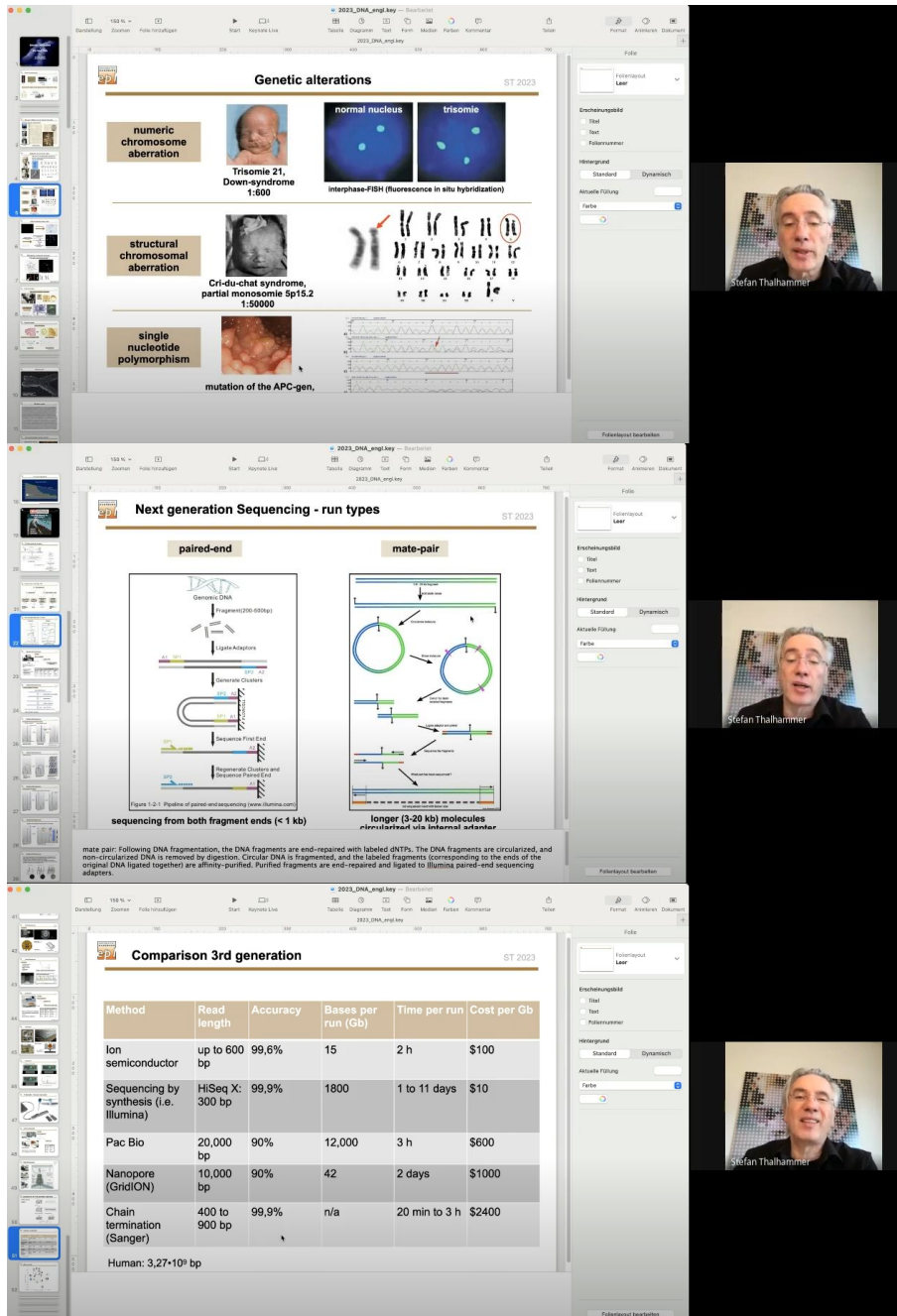
The Guest Lecture on “DNA Sequencing” by Dr. Stefan Thalhammer, Founder and CSO, Senray Technologies, Munich Germany on 24-APRIL-2023 through online mode by the Department of Biotechnology at Sri Venkateswara College of Engineering, Sriperumbudur through Google Meet platform for our undergraduate and postgraduate students and faculties. Dr. Stefan Thalhammer commenced the program with an enlightening keynote address that covered the fundamental concepts of DNA sequencing, the historical progression of sequencing technologies, and the significant impact of DNA sequencing on various scientific disciplines. His vast experience in the field added depth to the talk, and he emphasized the critical role of technological innovations in advancing our understanding of genetics. He elucidated the principles, strengths, and limitations of each method, enabling students to comprehend the underlying mechanisms that contribute to the accuracy and efficiency of DNA sequencing technologies.

One of the program's highlights was the interactive session, during which students had the opportunity to engage in a dialogue with Dr. Thalhammer. Participants enthusiastically asked questions, seeking clarification on complex topics and practical aspects of DNA sequencing. The interactive nature of the session fostered a dynamic learning environment, enabling students to gain valuable insights directly from an industry expert. The DNA Sequencing Program by Dr. Stefan Thalhammer proved to be an enriching experience for the students of the Department of Biotechnology. The event successfully delivered an in-depth understanding of DNA sequencing technologies, their applications, and the significance of advancements in the field. The interactive sessions and hands-on workshops contributed to a holistic learning experience, empowering students with both theoretical knowledge and practical skills. The program's success can be attributed to the collaborative efforts of the department, the expertise of Dr. Thalhammer, and the enthusiastic participation of the students.

Mr. N. Sathish
Organizing Secretary

Dr. K. Ganesh Prasath
Mr. J. G. Aswin Jen
Coordinators

Screenshots captured during the event



The screenshots show a presentation on genetic alterations and next-generation sequencing. The first slide, 'Genetic alterations', includes:

- numeric chromosome aberration:** Trisomie 21, Down-syndrom 1:5000. Includes a photo of a child and a fluorescence image labeled 'normal nucleus' and 'trisomie'.
- structural chromosomal aberration:** Cri-du-chat syndrome, partial monosomie 5p15.2 1:50000. Includes a photo of a child and a karyotype image.
- single nucleotide polymorphism:** mutation of the APC-gen. Includes a photo of a child and a DNA sequence diagram.

 The second slide, 'Next generation Sequencing - run types', includes:


- paired-end:** Diagram showing DNA fragmentation into 200-600bp fragments, ligation of adaptors, generation of clusters, and sequencing from both ends.
- mate-pair:** Diagram showing circular DNA fragments and longer (3-20 kb) molecules.

 The third slide, 'Comparison 3rd generation', includes the following table:

Method	Read length	Accuracy	Bases per run (Gb)	Time per run	Cost per Gb
Ion semiconductor	up to 600 bp	99,6%	15	2 h	\$100
Sequencing by synthesis (i.e. Illumina)	HiSeq X: 300 bp	99,9%	1800	1 to 11 days	\$10
Pac Bio	20,000 bp	90%	12,000	3 h	\$600
Nanopore (GridION)	10,000 bp	90%	42	2 days	\$1000
Chain termination (Sanger)	400 to 900 bp	99,9%	n/a	20 min to 3 h	\$2400

 Human: 3,27·10⁹ bp

Report Prepared by:



Dr. Aswin Jenio J G, AP/BIO



Prof. E. Nakkeeran, HoD/BIO

Prof. E. NAKKEERAN, M. Tech., Ph.D.
Professor & Head
Department of Biotechnology
Sri Venkateswara College of Engineering
Sriperumbudur Tk - 602 117, Tamilnadu, INDIA