# **PROGRAM BOOK**

AMP 2023 MOLECULAR GENETIC PATHOLOGY VIRTUAL REVIEW COURSE

May 16-19, 2023

Association For Molecular Pathology

# **MEET THE 2023 FACULTY**



Lauren L. Ritterhouse, MD, PhD Massachusetts General Hospital Chair: MGP Review Course



Annette Kim, MD, PhD Brigham and Women's Hospital



Angela M Lager, PhD University of Chicago



Diana Mandelker, MD, PhD Memorial Sloan Kettering



Ryan Peña, MD, PhD, D(ABHI) Beth Israel



Honey V. Reddi, PhD, FACMG Medical College of Wisconsin



Jason Rosenbaum, MD Kaiser Permanente, Northern California



Laura J. Tafe, MD Dartmouth-Hitchcock Health System



Eric Vail, MD Cedars Sinai



Rena Xian, MD, MS Johns Hopkins University School of Medicine



Ya<mark>ssmine</mark> Akkari, PhD Legacy Health



Pinar Bayrak-Toydemir, MD, PhD, FACMG University of Utah/ARUP



Jesse Cox, MD, PhD University of Nebraska Medical Center



Erin Graf, PhD, D(ABMM) Mayo Clinic Arizona



Lawrence Jennings, MD, PhD Northwestern University Feinberg School of Medicine

# AMP2023

**ANNUAL MEETING & EXPO** 

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https://amp23.amp.org/abstract-posters/abstract-submission-information/

## **LEARNER NOTIFICATION**

#### DISCLOSURE SUMMARY REPORT

#### Association for Molecular Pathology

2023 Molecular Genetic Pathology Review Course

#### **Disclosure of Conflict of Interest**

The following table of disclosure information is provided to learners and contains all financial relationships that each individual in a position to control the content disclosed to ASCP. All of these relationships were treated as a conflict of interest, and have been mitigated.

All individuals in a position to control the content of CE are listed below.

First Name Eriko	Last Name Clements	Ineligible Company : Relationship NA
Melissa	Kauffman	NA
Christal	Ralph	Regeneron Pharmaceuticals: Stock options or bond holdings
Yassmine	Akkari	Bio-Rad: Consulting fees or other remuneration
Pinar	Bayrak-Toydemir	American College of Medical Genetics: Speakers bureau
Jesse	Cox	NA
Erin	Graf	NA
Lawrence	Jennings	NA
Annette	Kim	Multiple Myeloma Research Foundation: Research grants
Angela	Lager	NA
Diana	Mandelker	NA
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Jason	Rosenbaum	NA
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#### **Contact Information**

If you have questions regarding the educational material in this activity, please contact AMP at ampeducation@amp.org.



Emerging & Evolving Biomarkers: RECENT FINDINGS, LABORATORY CONSIDERATIONS, AND CLINICAL IMPLICATIONS

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This program has been supported through educational grant funding provided by Amgen and Loxo Oncology at Lilly (for further information concerning Lilly grant funding visit www.lillygrantoffice.com.) Supporting companies had no control over its content. No personally-identifiable information regarding you is provided to any grant supporters.

# Learn about these and other biomarkers in our ongoing virtual educational series:

**MGMT** Speaker: Tejus Bale, MD, PhD

**HRD Score** Speaker: Melinda Telli, MD

**METex14** Speaker: Nikoletta Sidiropoulos, MD

**NTRK** Speaker: Lynette M. Sholl, MD

**ERBB2 (HER2) in Colorectal Cancer** Speaker: Sinchita Roy-Chowdhuri, MD, PhD

Myeloid Malignancy MRD Speaker: David Wu, MD, PhD

**KRAS** Speaker: Craig Mackinnon, MD, PhD

**Methylation Profiling** Speaker: Brent Orr, MD, PhD

**Immunoglobulin & T-cell Receptor Gene Sequencing** Speaker: Rena Xian, MD

**Mutational Signatures in Cancer** Speaker: Fei Dong, MD

**Microsatellite Instability (MSI) Testing for Cancer** Speaker: Sameek Roychowdhury, MD, PhD

**Being eNRGy Conscious: Understanding NRG1 Fusions** Speaker: Stephan Liu, MD

# TUESDAY, MAY 16, 2023

#### All times are in Eastern Time Zone

9:00-9:15 AM Welcome Lauren L. Ritterhouse, MD, PhD | *Massachusetts General Hospital* 

#### 9:15-10:00 AM

**Technology: Nucleic Acids Extraction, Pre-Analytic Considerations** Lauren L. Ritterhouse, MD, PhD | *Massachusetts General Hospital* 

CME/CMLE: 0.75

#### 10:00-10:45 AM

**Technology: Microarrays with Clinical Examples** Angela M. Lager, PhD | *University of Chicago* **CME/CMLE:** 0.75

10:45-11:00 AM

Break

11:00 AM-12:00 PM

Identity Testing with Case Studies Jesse Cox, MD, PhD | University of Nebraska Medical Center CME/CMLE: 1.00

#### 12:00-12:45 PM

Technology: Sanger Sequencing with Clinical Examples Honey V. Reddi, PhD, FACMG | Medical College of Wisconsin CME/CMLE: 0.75

#### 12:45-1:30 PM

Lunch

#### 1:30-3:30 PM

Technology: NGS Jason Rosenbaum, MD | Kaiser Permanente CME/CMLE : 2.00

#### 3:30-3:45 PM

Break

#### 3:45-5:00PM

NGS Bioinformatics Jason Rosenbaum, MD | Kaiser Permanente, Northern California CME/CMLE: 1.25

#### 5:00-6:00 PM

**Technology: Nucleic Acid Amplification Techniques with Case Examples** Eric Vail, MD | *Cedars Sinai* **CME/CMLE:** 1.0

6:00-6:30 PM Meet the Faculty



# Molecular in a Minute

Microlearning from The Association for Molecular Pathology



The Molecular Pathology Competency Series

These microlearning modules are targeted to practicing laboratory professionals and cover many aspects of competency in the laboratory. They are short (10-15 minute) presentations covering Core (basic proficiency) or

Advanced (specialized and/or recently updated) concepts in a particular area of laboratory training.

This content addresses specific advances in training, technology, and laboratory operations and acts as review and/or updates in important principles for laboratorians over the full arc of their careers.

https://www.amp.org/education/amp-molecular-in-a-minute-microlearning-modules-in-molecular-pathology/ **CORE: Biomarkers for Immunotherapy** Speaker: Honey V. Reddi, PhD, FACMG

**ADVANCED: Biomarkers for Immunotherapy** Speaker: Honey V. Reddi, PhD, FACMG

**CORE: Germline / Somatic Variants** Speaker: Alanna Church, MD

**ADVANCED: Germline / Somatic Variants** Speaker: Alanna Church, MD

**CORE: Lymphoid Clonality Testing** Speaker: Nathan Montgomery, MD PhD

CORE: Fluorescence in Situ Hybridization (FISH): Methodology and Clinical Utility Speaker: Lori Ramkissoon, MD

CORE: Fusion Detection by Next Generation Sequencing Using RNA Speaker: Alanna Church, MD

> **CORE: Quantitative PCR** Speaker: Lawrence Jennings, MD

CORE: PCR and Sanger Sequencing Speaker: Va Lip

ADVANCED: Detection of a Cryptic Gene Fusion in a B-ALL Speaker: Valentina Nardi, MD

# WEDNESDAY, MAY 17, 2023

#### All times are in Eastern Time Zone

#### 9:00-9:02 AM

Welcome and Updates Lauren L. Ritterhouse, MD, PhD | Massachusetts General Hospital

#### 9:02-10:15 AM

Math 101: Applications of Bayesian Analysis in Molecular Testing Annette Kim, MD, PhD | Brigham and Women's Hospital CME/CMLE: 1.25

#### 10:15-11:15 AM

Cytogenetics and Case Studies Yassmine Akkari, PhD | Legacy Health CME/CMLE: 1.00

#### 11:15-11:30 AM

Break

#### 11:30 AM-12:15 PM

FISH and Cases Angela M Lager, PhD | University of Chicago CME/CMLE: 0.75

#### 12:15-1:15 PM

HLA and Case Studies Ryan Pena, MD, PhD, D(ABHI) | Beth Israel CME/CMLE: 1.00

#### 1:15-2:00 PM

Lunch

#### 2:00-2:45 PM

Germline Cancer Syndromes Diana Mandelker, MD, PhD | Memorial Sloan Kettering CME/CMLE: 0.75

#### 2:45-4:00 PM

Inherited Conditions I and Case Studies Pinar Bayrak-Toydemir, MD, PhD, FACMG | University of Utah/ARUP CME/CMLE: 1.25

4:00-4:15 PM Break

#### 4:15-6:00 PM

Inherited Conditions II and Case Studies Pinar Bayrak-Toydemir, MD, PhD, FACMG | University of UTAH/ARUP CME/CMLE: 1.75

6:00-6:30 PM Meet the Faculty





# On-demand Recordings

# amp22.amp.org/recordings



# THURSDAY, MAY 18, 2023

#### All times are in Eastern Time Zone

#### 9:00-9:02 AM

Welcome and Updates Lauren L. Ritterhouse, MD, PhD | Massachusetts General Hospital

#### 9:02-10:00 AM

Hematopathology I and Case Studies (Myeloid) Annette Kim, MD, PhD | Brigham and Women's Hospital CME/CMLE: 1.00

#### 10:00-11:00 AM

Molecular Pathology Pearls in Lymphoid Malignancies Rena Xian, MD, MS | Johns Hopkins University School of Medicine CME/CMLE: 1.00

11:00-11:15 AM

**Break** 

#### 11:15 AM-12:15 PM

Key Molecular Laboratory Management Conceptsthat Impact Patient Care Erin Graf, PhD, D(ABMM) | Mayo Clinic Arizona CME/CMLE: 1.00

#### 12:15-1:15 PM

Laboratory Finances: Reimbursement, Laboratory Budgets and Implications for your Routine Practice Erin Graf, PhD, D(ABMM) |*Mayo Clinic Arizona* CME/CMLE: 1.00

#### 1:15-2:00 PM

Lunch

#### 2:00-3:45 PM

Molecular Oncology I and Case Studies Laura J. Tafe, MD | Dartmouth-Hitchcock Health System CME/CMLE: 1.75

#### 3:45-4:00 PM

Break

#### 4:00-5:00 PM

Molecular Oncology II and Case Studies Laura J. Tafe, MD | Dartmouth-Hitchcock Health System CME/CMLE: 1.00

#### 5:00-6:15 PM

#### **Pharmacogenomics and Case Studies**

Lawrence Jennings, MD, PhD | Northwestern University Feinberg School of Medicine CME/CMLE: 1.25

6:15-6:45 PM Meet the faculty



An Online Learning Experience



#### **AVAILABLE ON-DEMAND**

- Basic Biology and Detection of Cell-Free DNA
- Practical Analytical and Clinical Validation Strategies for Cell-Free Tumor DNA Assays
- Opportunities and Challenges Toward the Clinical Application of ctDNA MRD Testing in Solid Cancers
- Cell-Free (cf)DNA-based Prenatal Screening: Lessons Learned and Future Strategies
- Current and Emerging Applications of Cell-Free DNA Tumor Tests
- Cell-Free DNA: Predictive Tissue Injury Maps in COVID-19
- Utility of Clinical Metagenomic Next-Generation Sequencing for Diagnosis of Infections
- Hereditary Cancer Surveillance Using Cellfree DNA Sequencing

# Utility of Cell-Free DNA in the Clinic:

## Current State and Future Directions

To register or learn more about this FREE eight part series, visit: www.amp.org/LiquidBiopsy



# FRIDAY, MAY 19, 2023

#### All times are in Eastern Time Zone

#### 9:00-9:02 AM

Welcome and Updates Lauren L. Ritterhouse, MD, PhD | Massachusetts General Hospital

#### 9:02-10:15 AM

Infectious Diseases I: Overview of an Appropriate Infectious Diseases Molecular Menu and How it Should be Used with Case Studies Erin Graf, PhD, D(ABMM) | Mayo Clinic Arizona CME/CMLE: 1.25

#### 10:15-11:30 AM

Infectious Disease II: Important Limitations and Stewardship Approaches to Infectious Disease Molecular Testing with Case Studies Erin Graf, PhD, D(ABMM) | Mayo Clinic Arizona CME/CMLE: 1.25

11:30-11:45 AM

Break

11:45 AM-12:15 PM Faculty Panel and Closing Remarks

# AVAILABLE NOW! OVARIAN CANCER VIRTUAL EDUCATION SERIES

In collaboration with the European Society of Pathology, MSD, and AstraZeneca, the Association for Molecular Pathology (AMP) is pleased to present a new online learning experience. The Ovarian Cancer Virtual Education Series is freely available now at educate.amp.org.

- The Ovarian Cancer Virtual Education Series are now available for registration on AMPED<sup>™</sup>
- Learning modules on diagnostic testing in ovarian cancer have been co-created with expert pathologists and molecular geneticists in collaboration with AstraZeneca and MSD

#### Modules:

- Theory: Learn more about the background to ovarian cancer including epidemiology, HRRm tumour biology, diagnosis workflows, and treatment options
- Practical: Understand the concepts and techniques involved in tissue and germline BRCA testing, as well as HRD testing in ovarian cancer
- Best Practice: Learn the latest best practice guidance on molecular sequencing in ovarian cancer from testing to reporting

Each module will include a short summary video and a self assessment module to support your learning.

### All modules of this free online learning experience are available now at AMPED™. educate.amp.org

This educational curriculum is not supported by CME points. These educational materials are co-developed and funded by AstraZeneca and MSD. Z4-48417; Date of Preparation: September 2022













### **BOOK LIST**

The following books are suggested for those preparing for the Molecular Genetic Pathology board exam administered by the American Board of Medical Genetics and the American Board of Pathology.

This list represents the recommendations of the MGP Review Course faculty and the AMP Training and Education Committee; endorsement by the ABMG or the ABP is not implied.

#### GENERAL MOLECULAR PATHOLOGY

Thompson & Thompson Genetics in Medicine, 8th edition. Nussbaum RL et al., eds. Elsevier, 2015

Molecular Pathology: The Molecular Basis of Human Diseases 2nd edition. Coleman WB and Tsongalis GJ, eds. Elsevier, 2018

Diagnostic Molecular Pathology: A Guide to Applied Molecular Testing. Coleman WB and Tsongalis GJ, eds. Elsevier, 2016

Molecular Basis of Human Cancer, 2nd edition. Coleman WB and Tsongalis GJ, eds. Elsevier, 2017

Molecular Diagnostics: Fundamentals, Methods, and Clinical Applications 3rd edition. Buckingham L. ASCP, 2021

Genomic Medicine: A Practical Guide. Tafe LJ and Arcila ME, eds. Springer, 2020

#### CYTOGENETICS

Gardner and Sutherland's Chromosome Abnormalities and Genetic Counseling, 5th edition. McKinlay Gardner RJ, Amor DJ. Oxford University Press, 2018

The Principles of Clinical Cytogenetics, 3rd edition. Gersen SL and Keagle MB, eds. Human Press, 2013

Human Chromosomes, 4th edition. Miller OJ and Therman E, eds. Springer Press, 2000

*Vance GH, Khan WA. Utility of Fluorescence In Situ Hybridization in Clinical and Research Applications.* Advances in Molecular Pathology 2020; 3:65-75.

ISCN 2020: An international System for Human Cytogenomic Nomenclature (2020). Jean McGowan-Jordan et al. S. Karger 2020

#### FORENSICS / HLA TYPING

Fundamentals of Forensic DNA Typing. Butler JM. Elsevier Academic Press, 2010

Advanced Topics in Forensic DNA Typing: Methodology. Butler JM. Elsevier Academic Press, 2012

Advanced Topics in Forensic DNA Typing: Interpretation.Butler JM. Elsevier Academic Press, 2015

Transplantation Immunology: Methods and Protocols. Zachary AA and Leffell MS, Eds. Humana Press 2013

HLA Disease Associations. The Autoimmune Diseases Site Histocompatibility & Immunogenetics. Kallon D. eBook

## **BOOK LIST CONTINUED...**

#### LABORATORY MANAGEMENT

Molecular Pathology in Clinical Practice, 2nd edition. Leonard DGB, ed. Springer, 2016

Henry's Clinical Diagnosis and Management by Laboratory Methods, 23rd edition. McPherson RA and Pincus R, eds. WB Saunders Company, 2016

Clinical Laboratory Management, 2nd edition. Garcia LS, ASM Books, 2014

Clinical and Laboratory Standards Institute (CLSI). *Quality Management for Molecular Genetic Testing: Approved Guideline*. CLSI Document MM20-A (ISBN 1-56238-859-2 [Print]; ISBN 1-56238-860-6 [Electronic]. Clinical and Laboratory Standards Institute, 950 West Valley Road, Suite 2500, Wayne Pennsylvania 19087 USA, 2012

Laboratory Administration for Pathologists, 2nd edition. College of American Pathologists, January 1, 2019

#### MEDICAL GENETICS

Thompson & Thompson Genetics in Medicine, 8th edition. Nussbaum RL et al., eds. Elsevier, 2015

Vogel and Motulsky's Human Genetics: Problems and Approaches. Speicher MR, Antonarakis SE, Motulsky AG, eds. Springer, 2010

Atlas of Genetic Diagnosis and Counseling, 3rd edition. Chen H. Springer, 2017

The Metabolic and Molecular Basis of Inherited Disease, 8th edition . Scriver CR, et al. eds. McGraw-Hill Professional, 2000 Note: Scriver's OMMBID (online version of the above) available to subscribers online at http://www.genetics.accessmedicine.com

Smith's Recognizable Patterns of Human Malformation, 7th edition. Jones, K, Jones MC, del Campo MWB. Saunders Company, 2013

#### **METABOLIC GENETICS**

The Metabolic and Molecular Basis of Inherited Disease, 8th edition. Scriver CR et al. eds. McGraw-Hill Professional, 2000 Note: Scriver's OMMBID (online version of the above) available to subscribers online at http://genetics.accessmedicine.com

Atlas of Inherited Metabolic Diseases, 4th edition. Nyhan WL and Hoffmann GF. CRC Press, 2020

#### **MOLECULAR GENETICS / BIOLOGY**

Human Molecular Genetics, 5th edition. Strachan TS and Read AP. CRC Press, 2019

Color Atlas of Genetics, 4th edition. Passarge E. Thieme, 2012

## **BOOK LIST CONTINUED...**

#### MOLECULAR HEMATOLOGY, HEMATOPATHOLOGY, AND ONCOLOGY

WHO-Tumours of Haematopoietic and Lymphoid Tissues, revised 4th edition, 2017. Robbins and Cotran Pathologic Basis of Disease, 10th edition

*Kumar V, Abbas AK, Aster JC. Elsevier, 2020 Diagnostic Pathology: Molecular Oncology, 2nd edition.* Vasef MA and Auerbach A. Elsevier, 2019. https://tumourclassification.iarc.who.int/welcome/

<u>Virchows Archives, Volume 482, issue 1, January 1.</u> Annual Review Issue: Advances in the classification of myeloid and lymphoid neoplasms as revealed in the International Consensus Classification. Issue editors Daniel A Arber, Elias Campo, Elaine S. Jaffe. https://link.springer.com/journal/428/volumes-and-issues/482-1

Genomic Medicine: A Practical Guide 1st ed. 2020 Edition, by Laura J. Tafe (Editor), Maria E. Arcila (Editor)

Diagnostic Molecular Pathology: A Guide to Applied Molecular Testing 2nd Edition by William B. Coleman (Editor), Gregory J. Tsongalis PhD HCLD CC FNACB (Editor)

#### MOLECULAR MICROBIOLOGY

Manual of Clinical Microbiology, 12th edition (2 volumes). Jorgenson JH and Pfaller MA, eds. ASM Press, 2019

Molecular Diagnostics, 3rd edition. Patrinos GP and Ansorge WJ. Academic Press (Elsevier), 2016

Molecular Microbiology: Diagnostic Principles and Practice, 3rd edition. Persing DH, et al., eds. ASM Press, 2016

Clinical Microbiology Procedures Handbook, 3 Volume Set, 4th edition. Leber, AL ed. ASM Press, 2016

Advanced Techniques in Diagnostic Microbiology. Tang, Y-W and Stratton, CW eds. Springer, 2013

Jawetz, Melnick & Adelbergs Medical Microbiology, 28th edition. Riedel S., Morse SA, Mietzner T, Miller S, McGraw Hill. 2019

#### PHARMACOGENETICS

Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, 6th edition. Rifai N, Horvath AR, Wittwer CT, eds. Elsevier, 2018

Principles of Pharmacogenetics and Pharmacogenomics. Altman RB, Flockhart D, Goldstein DB. Cambridge University Press, 2012

Molecular Pathology in Clinical Practice, 2nd edition. Leonard DGB, ed. Springer, 2016

Clinical Pharmacogenetics Implementation Consortium (CPIC®). https://cpicpgx.org/

PharmGKB. https://www.pharmgkb.org/

PharmVar. https://www.pharmvar.org/genes

#### **RISK ASSESSMENT AND GENETIC COUNSELING**

Thompson & Thompson Genetics in Medicine, 8th edition. Nussbaum RL et al., eds. Elsevier, 2015

Atlas of Genetic Diagnosis and Counseling, 3rd edition. Chen H. Springer, 2017

Chromosome Abnormalities and Genetic Counseling, 4th edition. Gardner RJ, Sutherland GR, McKinlay RJ. Oxford University Press, 2012

Practical Genetic Counseling for the Laboratory. Goodenberger ML Thomas BC, Kruisselbrink T eds. Oxford University Press, 2017

# AMP EUROPE 2023

Milan, Italy June 18–20, 2023 NH Milano Congress Centre

www.amp-europe-congress.com

ASSOCIATION FOR MOLECULA

# RESOURCES

#### Click on the titles for links:



#### THE FELLOWSHIP IN-SERVICE EXAM (FISE) QUESTION BANK

These exam questions were written by MGP faculty from many MGP-Fellowship institutions and cover a range of topics.

For each examination, a total of 45 questions populate from a large question bank. At the end of the exam, participants receive results, an explanation of the correct choice, and references for further information.

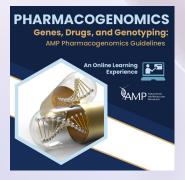
#### MOLECULAR IN MY POCKET ™

Molecular in My Pocket<sup>TM</sup> reference card series is for anyone looking to quickly reference molecular diagnostics information in a convenient format.

There are now more than 20 of the popular Molecular in My Pocket cards, available at no cost by downloading from the AMP website.

Cards were assembled, and are reviewed annually, by subject matter experts on the AMP Training and Education Committee.





#### Pharmacogenomics: Genes, Drugs, and Genotyping: AMP Pharmacogenomics Guidelines

This course is an AMP Certificate Program on the introduction to pharmacogenomics and a review of AMP's expert consensus recommendations for standardization of alleles for clinical pharmacogenomic genotyping assays.

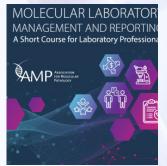
Participants can earn a certificate after passing an examination on the content.

This course is free for AMP members.

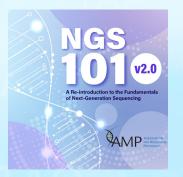
#### **MOLECULAR LABORATORY MANAGEMENT SHORT COURSE**

An AMP Certificate Program to provide training in laboratory management and soft skills required for operating clinical molecular laboratories. It includes approximately 10 hours of lecture content from an expert faculty as well as templates, exercises, and reference materials.

Participants can earn a certificate after passing an examination on the content. This course is offered free for everyone.



# RESOURCES



#### NGS101 v2.0 SHORT COURSE

This course is an AMP Certificate Program on the fundamentals of Next-Generation Sequencing.

It provides a comprehensive overview on implementing and running NGS in your laboratory.

Participants can earn a certificate after passing an examination on the content.

This course is free for AMP members.

#### **REVIEW FLASHCARDS**

Use these flashcards for quick review. We are continuouly adding more flashcards so check back often.

The flashcards are free for AMP members.





#### **GetAMPed! COURSE**

This yearly course is held live the day before the AMP Annual Meeting & Expo.

The course features presentations and case studies designed to update learners on the most current technologies and molecular pathology principles.

# **AMP2023**

## ANNUAL MEETING & EXPO

NOVEMBER 14-18, 2023 • SALT LAKE CITY, UT, USA

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