30th tRNA CONFERENCE

tRNA 2026 · Scientific Programme

20–24 September 2026 · Aquila Atlantis Hotel, Heraklion, Crete

SUNDAY 20 September 2026

13:00	REGISTRATION	*Registration opens*	

OPENING / KEYNOTE

CHAIRS: **Constantinos Stathopoulos, Jinwei Zhang**

17:00-17:10	**Constantinos Stathopoulos** **Jinwei Zhang** OPENING REMARKS	OC remarks on the 30th tRNA Conference	
17:10-17:50	**Tsutomu Suzuki** OPENING TALK	Expanding paradigms of tRNA modifications in health and disease	168
17:50-18:30	**Zoya Ignatova** KEYNOTE TALK	Expanding the functional landscape of tRNAs beyond translation into therapeutics	101
18:30-18:50	COFFEE BREAK		

S1. tRNA LIFE CYCLE AND ENZYMES I (SIDNEY ALTMAN ENDOWMENT SESSION)

CHAIRS: **Vicky Stamatopoulou, Philippe Giegé**

18:50-19:10	**Eric Phizicky**	An unexpected link between the biology of S. pombe Pus1 and the cytosolic iron-sulfur cluster assembly pathway	206
19:10-19:30	**Carine Tisné**	Advances in the structural and functional understanding of m1A tRNA modification	113
19:30-19:50	**Markos Koutmos**	Decoding context in tRNA modification: from Pus4 substrate gating to ALKBH8-driven oncogenesis	194
19:50-20:05	**Artem Nemudryi**	Bacterial Schlafen nucleases cleave tRNA to restrict phage infection	133
20:05-20:20	**Cassandra Hayne**	Novel insights into the function and cellular roles of the human tRNA splicing endonuclease (TSEN) complex	148
20:30	WELCOME COCKTAIL		

MONDAY 21 September 2026

S2. tRNA LIFE CYCLE AND ENZYMES II

CHAIRS: **Hubert Becker, Sebastian Glatt**

09:00-09:20	**Karin Musier-Forsyth**	Conservation and function of MSC-associated OB-fold/EMAP II domains	209
09:20-09:40	**Osamu Nureki**	Crosstalk between membrane and nucleic acids	218
09:40-10:00	**Susan Martinis**	Human colon cell migration and socialization induced by small RNA nucleotides	227
10:00-10:20	**Ita Gruić Sovulj**	Evolutionary remodeling of class I aminoacyl-tRNA synthetases for enhanced catalysis and non-canonical function	198
10:20-10:50	COFFEE BREAK		
10:50-11:10	**Stewart Shuman**	2''F-NAD+ is a broad-spectrum tRNA 2'-phosphotransferase (Tpt1) poison that traps the enzyme on its abortive RNA-2'-phospho-(2''F-ADP-ribose) reaction intermediate	165
11:10-11:30	**Javier Martinez**	Ashwin and FAM98 paralogs define nuclear and cytoplasmic RNA ligase complexes for tRNA biogenesis	151
11:30-11:50	**Jirka Peschek**	Structural and mechanistic insights into the fungal tRNA ligase Trl1	210
11:50-12:10	**Utz Fischer**	tRNA-based chaperoning of protein complex assembly	203
12:10-12:30	**Leslie A. Nangle**	ATYR0101: a platform-derived fragment of human aspartyl-tRNA synthetase targeting LTBP-1 to selectively induce myofibroblast apoptosis	199
12:30-12:45	**Ambro van Hoof**	Characterization of tRNA ligase (Trl1) function in pathogenic fungi and trypanosomes reveals the ligase domain of Trl1 as a promising drug target	143
12:45-13:00	**Sigal Ben-Yehuda**	A conserved family of RNA chaperones promotes tRNA charging to accelerate translation	235
13:00-13:15	**Bernhard Kuhle**	Molecular mechanism of human tRNA 3’CCA addition	110
13:15-13:30	**Jay R. Hesselberth**	Nanopore-enabled analysis of transfer RNA aminoacylation	187
13:30-14:30	LUNCH		

MONDAY 21 September 2026

S3. tRNA MODIFICATIONS I

CHAIRS: **Juan Alfonzo, Valerie de Crecy-Lagard**

14:30-14:50	**Rujuan Liu**	Molecular basis of m1A58 distribution in cytoplasmic and mitochondrial tRNAs and its essential role in initiator tRNA maturation	**211**
14:50-15:10	**Kozo Tomita**	Repurposing translation factors into a composite tRNA-processing enzyme	**147**
15:10-15:30	**Valerie de Crecy-Lagard**	Diversity and evolution of wobble uridine modification pathways in bacteria and archaea	**44**
15:30-15:50	**Andrés Palencia**	Structural studies of leucyl-tRNA synthetases and applications for the development of novel therapeutics	**60**
15:50-16:05	**Yi Zhang**	Non-canonical mRNA editing by tRNA adenosine deaminases: determinants and mechanisms	**15**
16:05-16:20	**Marta Walczak**	Molecular insights into the human tRNA thiolation machinery	**94**
16:20-16:50	**COFFEE BREAK**		
16:50-17:10	**Sebastian Glatt**	Understanding human tRNA modifiers at the atomic scale	**73**
17:10-17:30	**Ann Ehrenhofer-Murray**	Queuosine modification of tRNAs: functional crosstalk with (ms2)i6A modification and role in neuronal development	**9**
17:30-17:50	**Mark Helm**	Redefining tRNA purity by in-gel hybridization	**186**
17:50-18:10	**Djemel Hamdane**	Dihydrouridine synthases as multifunctional redox-responsive epitranscriptomic enzymes	**54**
18:10-18:25	**Dragony Fu**	Sequential tRNA modifications drive structural remodeling of the anticodon stem-loop	**229**
18:25-18:40	**Fan-Yan Wei**	Epitranscriptome signature of aging in mice and human	**166**

MONDAY 21 September 2026

18:40-19:10	**Flash talks I**		
18:40-18:43	**Zhaohang Feng**	Structural basis of the CdiA-CT tRNase toxin in complex with translation factors and tRNA	**155**
18:43-18:46	**Claudius Doktor**	Breaking a long-standing dogma: Functional class II CCA-adding enzymes are present in Archaea	**42**
18:46-18:49	**Jesse Leavitt**	Transcriptome profiling reveals widespread import of nucleus-encoded tRNAs into mammalian mitochondria	**136**
18:49-18:52	**Kezia Dobson**	A nanopore-based high throughput biochemical assay for aminoacyl tRNA synthetase activity and specificity	**190**
18:52-18:55	**Katharina Görlitz**	Inactivation of Pus1 triggers tRNATrpCCA instability and increases fluoropyrimidine sensitivity in Saccharomyces cerevisiae	**6**
18:55-18:58	**Ilka Heinemann**	Histidine supplementation stabilizes hearing and vision and improves growth in HARS1-related autosomal recessive disorder associated with Usher-like symptoms in a clinical trial	**131**
18:58-19:01	**Pauline Böhnert**	Elp1 phosphorylation effects on the tRNA modification function of the Elongator complex	**5**
19:01-19:04	**Takayuki Ohira**	Functional specialization of TmcA paralogs in ac4C modification and thermal adaptation of Sulfolobales	**129**
19:04-19:07	**Ursula Toth**	Structural and functional diversity of 2'-OH ribose tRNA methylation complexes across eukaryotes	**150**
19:07-19:10	**Joël Roth**	Global protein synthesis repression alleviates defects induced by hypomodified tRNAs in Saccharomyces cerevisiae	**16**
19:30-21:00	DINNER		
21:00	**Poster session I** **Poster Size: A0 (84.1 x 118.9 cm) or (33.1 x 46.8 inches)** **Orientation : Portrait**		

TUESDAY 22 September 2026

S4. tRNA MODIFICATIONS II

CHAIRS: **Stefan Maas, Eric Phizicky**

09:00-09:10	**Stefan Maas** INTRO	Introduction of RNA Modifications Driving Oncogenesis (RNAMoDO) and other NIH programs	
09:10-09:30	**Juan Alfonzo**	Duplication and recruitment of the wybutosine pathway to mitochondria as a key step to organellar function	135
09:30-09:50	**Richard Gregory**	Defining functional tRNA landscapes and vulnerabilities in cancer	215
09:50-10:10	**Beatrice Golinelli-Pimpaneau**	A hydrosulfide channel connects cysteine desulfurase to the [4Fe-4S] cluster of D-type MnmA for tRNA anticodon sulfuration	132
10:10-10:40	COFFEE BREAK		
10:40-11:00	**Jane Jackman**	Harnessing the potential of 3'-5' RNA polymerases for chemical and biological applications	216
11:00-11:20	**Stefanie Kaiser**	Expanding the reach of tRNA mass spectrometry: low-input sequencing and parallel isoacceptor analysis	212
11:20-11:40	**Francesca Tuorto**	Molecular and biological functions of queuosine-tRNA modification	3
11:40-11:55	**Peter Sarin**	Queuosine-mediated antiphage defence mechanisms and phage-induced host tRNA cleavage in the marine bacterium Shewanella glacialimarina	53
11:55-12:10	**Gyuhyeok Cho**	Discovery and structural characterization of dual wobble tRNA 5-carboxymethylaminomethyluridine oxidoreductases in Gram-positive bacteria	102
12:10-12:25	**Alexander Maman**	Discovery of natural phosphorothioates and their writer machinery in archaeal tRNA	118
12:25-12:40	**Igor Kaczmarczyk**	Cryo-EM snapshots reveal reversible catalysis during tRNA modification	123
12:40-12:55	**Group photo**		
13:00-14:30	MENTOR/MENTEE LUNCH		

TUESDAY 22 September 2026

S5. tRNA IN TRANSLATION

CHAIRS: **Xiang-Lei Yang; Hiroaki Suga**

14:30-14:50	**Sebastian Leidel**	How tRNA and mRNA modifications talk to each other	191
14:50-15:10	**Marina Rodnina**	Translational ambiguity as a regulatory principle	25
15:10-15:30	**Yoav Arava**	Local protein synthesis in neurons mediated by aminoacyl-tRNA synthetase	184
15:30-15:50	**Philippe Giegé**	Specific features of plant mitochondrial translation, from ribosome assembly to translation initiation	24
15:50-16:05	**Yury Polikanov**	Sequence-specific trapping of EF-Tu/glycyl-tRNA complex on the ribosome by bottromycin	14
16:05-16:20	**Crispin Miller**	A tRNA regulatory nexus of cell-state-dependent protein expression	41
16:20-16:50	COFFEE BREAK		
16:50-17:10	**Susan Ackerman**	Sequence variation upstream of a cytoplasmic tRNA differentially modifies neurodegeneration induced by ribosome stalling	221
17:10-17:30	**Jiqiang (Lanny) Ling**	Ribosomal fidelity orchestrates the integrated stress response through ribosome stalling at wobble-dependent codons	222
17:30-17:50	**Kristin Koutmou**	Dihydrouridine tRNA modifications ensure ribosome frame maintenance during protein synthesis	200
17:50-18:10	**Leoš Shivaya Valášek**	A short-lived ribosomal life of a near-cognate tRNA? It could be extended, some people say!	45
18:10 -18:30	**Babak Javid**	The ribosome regulates its own infidelity	230
18:30-19:00	**Flash talks II**		
18:30-18:33	**Jeferry Tharp**	An engineered glutamic acid tRNA for efficient suppression of pathogenic nonsense mutations	201
18:33-18:36	**Keyede Oye**	Prime editing-mediated conversion of an endogenous tRNA into a +1-frameshift suppressor qtRNA for disease-agnostic therapeutic genome editing	164
18:36-18:39	**Eduardo Campos-Chávez**	Integrative Framework Links Natural RNA Sequence Diversity to Structure, Dynamics, and Function Across Typical T-box Riboswitches	96
18:39-18:42	**Rebekah M. B. Silva**	tRNA-dependent DNA hypermodification pathways from bacteriophage	104
18:42-18:45	**Grazia Marini**	Multidimensional tRNA Profiling: an integrated framework for decoding translational regulation	90
18:45-18:48	**Henry Moore**	A Pipeline for Allele-specific tRNA-seq Analysis	174
18:48-18:51	**Yuzuru Itoh**	Structural analysis of the release mechanism of the SecM-mediated ribosome arrest by the ABCF protein YheS	48
18:51-18:54	**Saskia Meier**	The 3' tDR-Gly: A stress-responsive tRNA fragment influencing gene expression in Escherichia coli	61
18:54-18:57	**Klementina Polanec**	tRNAs as modulators of TDP-43 proteinopathy	188
18:57-19:00	**Athanasios-Nasir Shaukat**	An ancestral tRNA processing enzyme repurposed for cytoplasmic non-coding RNA surveillance	156
19:30-21:00	DINNER		
21:00	**Poster session II**	**Poster Size: A0 (84.1 x 118.9 cm) - Orientation : Portrait**	

WEDNESDAY 23 September 2026

S6. tRNA BIOLOGY & DISEASES

CHAIRS: Stefano Marzi, Karin Musier-Forsyth

09:00-09:20	**Xiang-Lei Yang**	Anti-5'-tRNA-His-GUG half autoantibodies identified in Jo-1-positive patients correlate with IFNα elevation	207
09:20-09:40	**Zdeněk Paris**	Codon-biased translation mediated by queuosine tRNA modification is important for the virulence of Leishmania mexicana	62
09:40-10:00	**Oscar Vargas-Rodriguez**	A specialized, auxiliary tRNA synthetase safeguards tRNA aminoacylation during stress	219
10:00-10:20	**Haissi Cui**	(Towards) visualization of genetically encoded tRNAs in live cell imaging	202
10:20-10:50	COFFEE BREAK		
10:50-11:10	**Paul Fox**	EPRS1 goes mod(ification)	214
11:10-11:30	**Mariana Igoillo-Esteve**	TRMT10A deficiency-mediated tRNA fragmentation impairs insulin maturation in human pancreatic beta-cells	149
11:30-11:50	**Erik Storkebaum**	From pathogenetic insight to therapeutic approach: developing a tRNA gene therapy for Charcot-Marie-Tooth peripheral neuropathy	26
11:50-12:10	**Sunghoon Kim**	Substrate-driven rescue of LARS2 dysfunction suggests a therapeutic approach for Perrault syndrome	107
12:10-12:30	**Raghu Chivukula**	Polyglycine aggregates sequester the tRNA ligase complex via FAM98B and impair tRNA splicing in GGC repeat expansion disorders	34
12:30-12:50	**Caroline Köhrer**	Engineered tRNA medicines for stop codon disease: a modular platform for multi-tissue therapeutic development	127
12:50-13:10	**Patrick O'Donoghue**	Mistranslation in human pan-genome cell lines inspires applications of suppressor tRNAs to medicine	152
13:10	LIGHT LUNCH		
14:00-19:00	**Crete cultural sites** EXCURSION – CRETAN DINNER		
20:00	**Free evening**		

THURSDAY 24 September 2026

S7. tRNA STRUCTURE, FRAGMENTS & INTERACTIONS

CHAIRS: **Norbert Polacek, Dragony Fu**

09:00-09:20	**Todd Lowe**	New stories decoding human tRNA gene evolution & function: integrating sequence, functional genomics, and population-scale evidence	**228**
09:20-09:40	**Sandra Wolin**	RNA chaperones in tRNA biogenesis	**161**
09:40-10:00	**Ana Raquel Soares**	Host tRNA modification dynamics during influenza A virus infection: implications for viral transcript decoding and cellular stress responses	**35**
10:00-10:20	**Yun-Xing Wang**	Structures of a T4 dimeric pre-tRNA-E. coli RNase P maturation complexes	**225**
10:20-10:50	COFFEE BREAK		
10:50-11:10	**Norbert Polacek**	Mechanistic insights into bacterial tRNA fragments during stress response	**78**
11:10-11:30	**Zeynep Baharoglu**	tRNA modification pathways shape stress responses in Vibrio cholerae	**31**
11:30-11:50	**Anindya Dutta**	tRF 3021a supports cancer cell invasiveness, apoptosis resistance and global protein synthesis	**117**
11:50-12:10	**Stefano Marzi**	Species-specific translation control in Staphylococcus aureus: initiation, decoding and tRNA specialization	**185**
12:10-12:25	**Ruslan Afasizhev**	tRNA walks into an editing complex	**17**
12:25-12:40	**Rachel Robertson**	The folding and structural dynamics of a tRNA-Arg-UCU isodecoder associated with neurodegeneration	**59**
12:40-12:55	**Tong Zhou**	Decoding tRNA fragmentation with emerging analytical strategies	**30**
13:00-14:30	LUNCH		
13:20-14:20	**Todd Lowe** CONCURRENT TUTORIAL	GtRNAdb3 Tutorials: new features of genomic tRNA databases and tools	

S8. tRNAomics & SYNTHETIC BIOLOGY

CHAIRS: **Todd Lowe, Tsutomu Suzuki**

14:30-14:50	**Hiroaki Suga**	Extensive genetic code reprogramming by flexizymes and applications	**28**
14:50-15:10	**Jesse Rinehart**	Engineering translation in genomically recoded organisms: old codons, new challenges	**154**
15:10-15:30	**Rajan Sankaranarayanan**	Chirality enforcement during protein biosynthesis and its evolutionary implications	**167**
15:30-15:45	**Miten Jain**	tRNA isodecoder analysis using nanopore ionic current signals and deep learning	**69**
15:45-16:00	**Patricia Chan**	tRAX 2.0: comprehensive expression and modification profiling and integrated analysis of tRNAs and tRNA-derived RNAs	**181**
16:00-16:15	**Isabel S. Naarmann-de Vries**	Nanopore tRNA-sequencing: open solutions for (de)-multiplexing and modification detection ***Sponsored by ELTA90***	**234**
16:15-16:45	COFFEE BREAK		
16:45-17:05	**Ya-Ming Hou**	Decoding tRNA modifications by 2-read nanopore direct sequencing	**95**
17:05-17:45	**Anita Hopper** CLOSING TALK	tRNA introns: novel small noncoding regulatory RNAs	**204**
17:45-18:25	**Awards ceremony** CEREMONY	C. Stathopoulos, J. Zhang, H. Becker. V. Stamatopoulou	
18:25-18:40	**Closing comments-Presentation of the next tRNA Conference** CLOSING		
20:30	GALA DINNER	Coaches will depart from the venue hotel from 20:00	