CONTENTS

- **Part I - BACKGROUND:**
- DNA supracode (1991-1997)
- Human genome Codon populations: Numbers and atomic weighs perfect balancing (2009)
- **Part II - RESULTS:**
- Whole Human Genome Codon Populations reveals central rôle of « Phi » the « Golden ratio » J.C. Perez - Interdiscip Sci Comput Life Sci (2010) 2: 1–13 DOI: 10.1007/s12539-010-0022-0« Codon Populations in Single-stranded Whole Human Genome DNA Are Fractal and Fine-tuned by the Golden Ratio 1.618 »
- Proof of a Functional Human Chromosomes Meta-structure involving « Pi » and « Phi » Universal Constants.
- **Part III - FUTURES:**
- **The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes: Binary Code and Waveforms in DNA...** ***« Is there an Equation for Life »?***
- **Perspectives in Luc Montagnier's** ***« DNA Waves and Water »*** **breakthrough Luc Montagnier ,Lindau NOBELS conference, 28 June, 2010 - DNA BETWEEN PHYSICS AND BIOLOGY: « DNA WAVES AND WATER »**

$$\mathrm{Proj}\,(m) = [\,1 - [\,4\pi\sqrt{\varphi}\varphi\varphi^2\,]\,]\,m$$

with: $\sqrt{\varphi}=1/\sqrt{\Phi}$ *Phi* *is the GOLDEN RATIO* Φ

$\varphi = 1/\Phi$

$\varphi^2 = 1/\Phi^2$

The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME – I - PROJECTION - First Law: Law of CODIFICATION and UNIFICATION of all GENETIC information: bioatoms, DNA, RNA and amino acids

$$\mathrm{Proj}\,(m) = [\,1 - [\,4\pi\sqrt{\varphi}\varphi\varphi^2\,]\,]\,m$$

with: $\sqrt{\varphi}=1/\sqrt{\Phi}$

$\varphi = 1/\Phi$

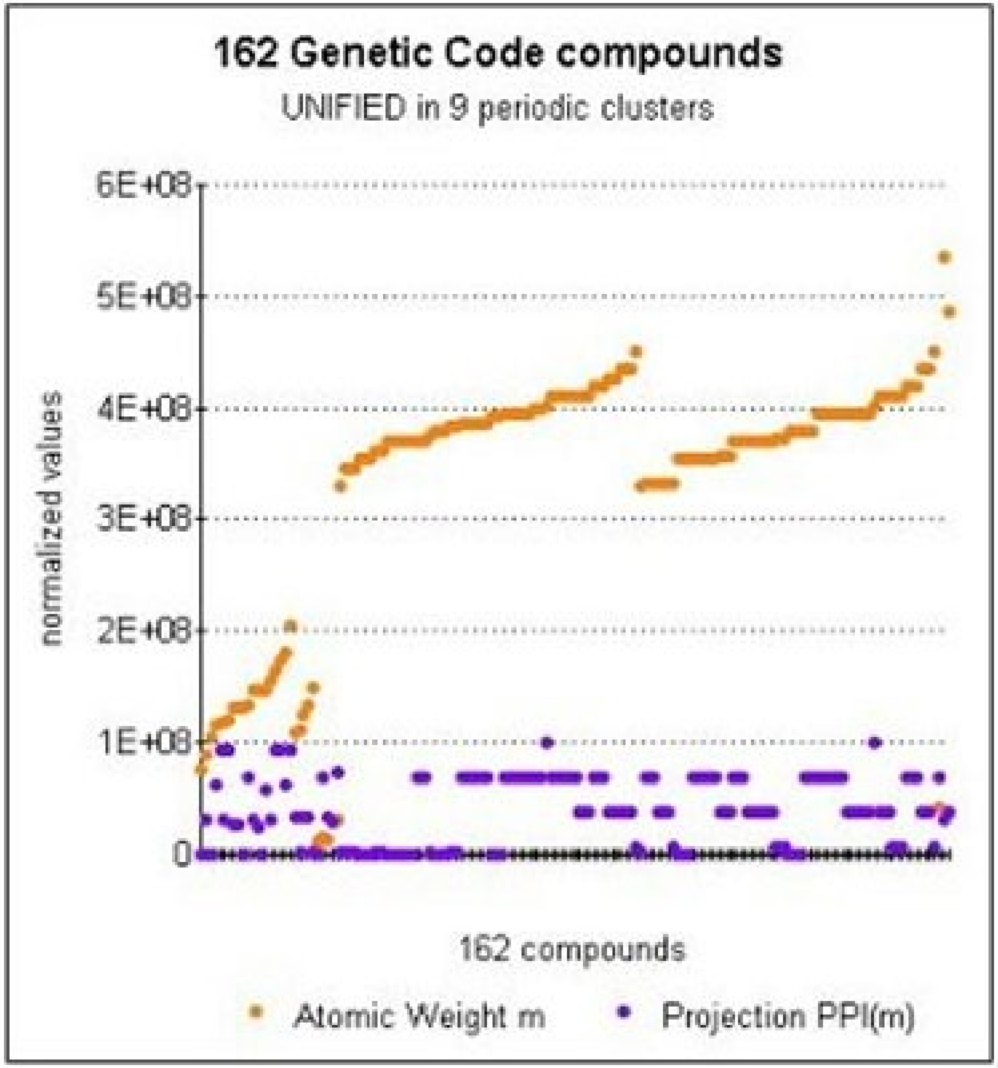
$\varphi^2 = 1/\Phi^2$

Phi *is the GOLDEN RATIO* Φ

- Between 1997 and 2003, we discovered then explored this universal formula of numerical projection of any biologcal material atomic weight.
- From the result of the projection, we keep only the decimal residue.
- Then, applying this formula to various biological components we discovered that all projections are close multiples of Pi/10=0.314...=18°
- Now we could associate with any projection an integer number « n » as proj(component) = « n » Pi/10 where n is in the range [-10,+10]
- Examples:
- Atomic weight of GLY = 75.067542.
- projection (GLY) = 0.0001271351803.
- Close Angle N.PI/10 =: 0.000000000 (N=0).
- Approximation error : (GLY,0) = 0.0001271351803.
- PI-MASS(GLY) = 0 or 0° or also 0.Pi/10.
- Others Pi-Mass: Carbon=0 Pi/10, Hydrogen=-1 Pi/10
- Oxygen= -1 Pi/10, Nitrogen=+2 Pi/10 GGG base= -3 Pi/10
- Lys amino acid=+4 Pi/10, GGU codon RNA =-2 Pi/10 etc...

▯ **The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:**

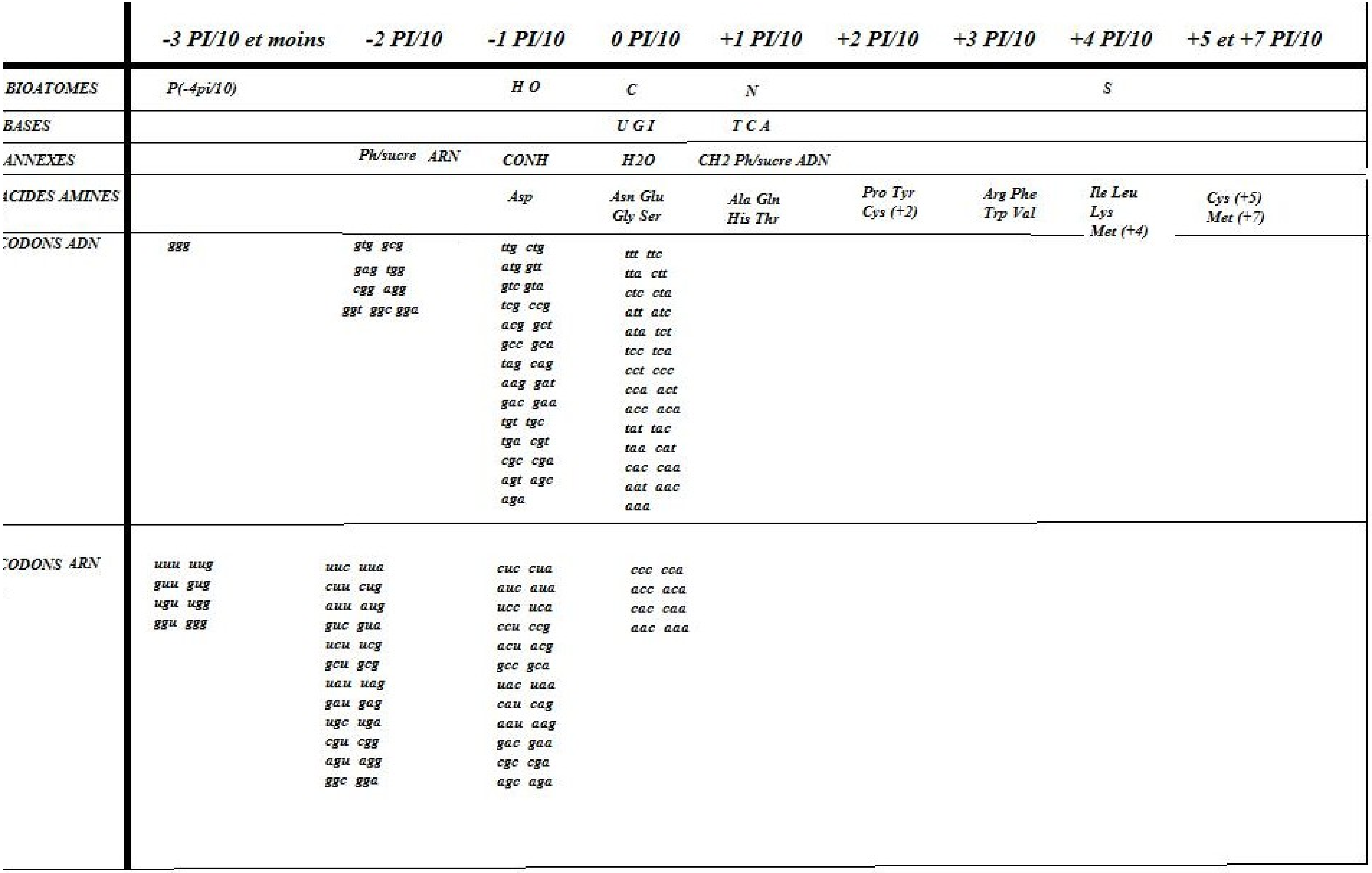
TIME -II- PULSATION. First Law: Law of CODIFICATION and UNIFICATION of all GENETIC information: bioatoms, DNA, RNA and amino acids



- Applying this Projection Coding Law to ALL BIOLOGICAL MATERIALS, we obtain a « barcode » like banding as follows...
- Here we analysed 162 compounds
- Of all usual genetic materials as 20 amino acids, 64 DNA codons, 64 RNA codons, 5 nucleotides TUCAG etc...
- In orange, the atomic weights, In purple, the integer numbers associated codes... doing a barcode like printing, showing evidence of the UNIFICATION in a COMMON CODE of all the 3 DNA, RNA and amino acids worlds.

The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -III- CODIFICATION. First Law: Law of CODIFICATION and UNIFICATION of all GENETIC information: bioatoms, DNA, RNA and amino acids

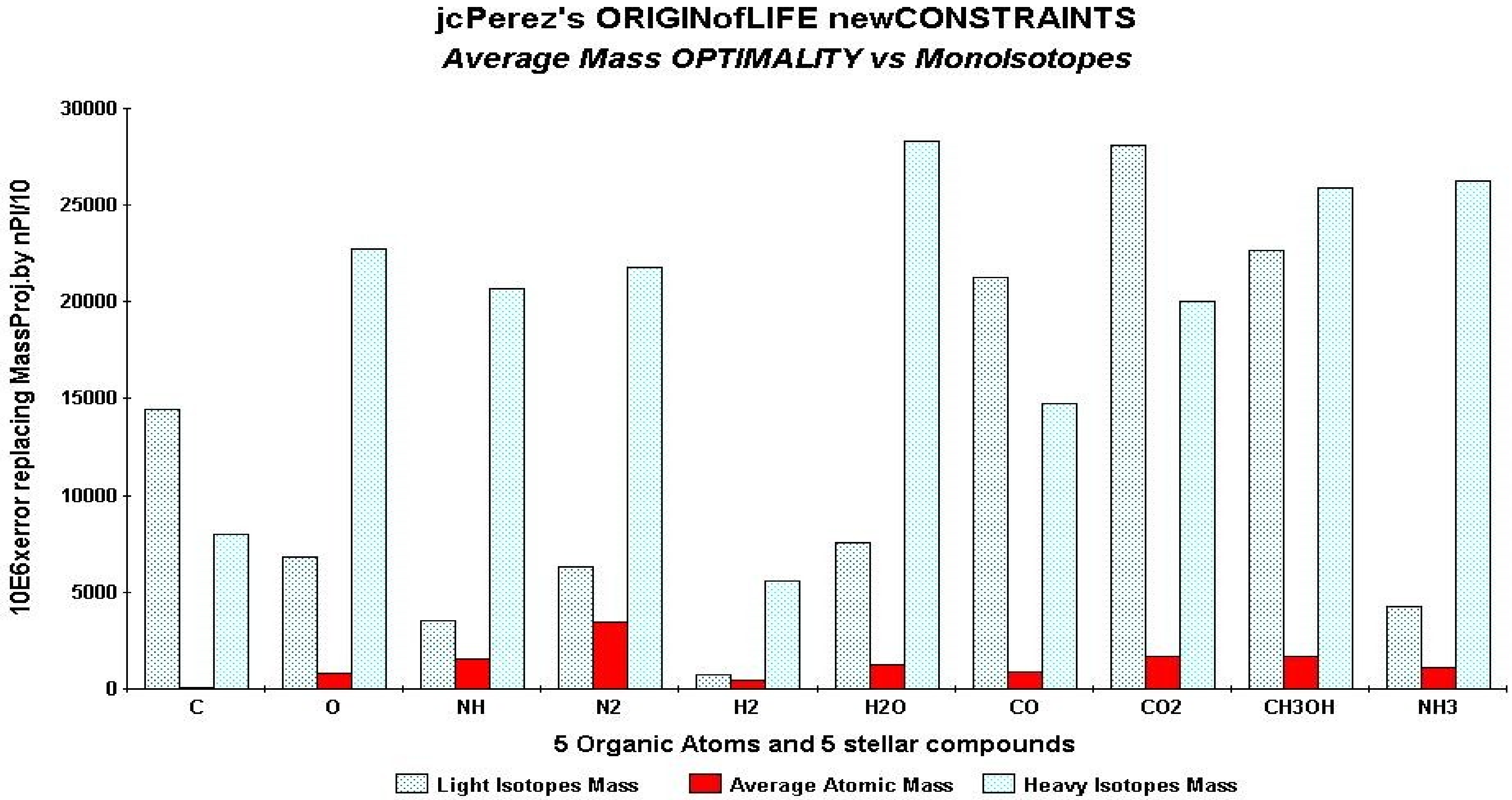


	-3 PI/10 et moins	*-2 PI/10*	*-1 PI/10*	*0 PI/10*	*+1 PI/10*	*+2 PI/10*	*+3 PI/10*	*+4 PI/10*	*+5 et +7 PI/10*
BIOATOMES	*P(-4pi/10)*		*H O*	*C*	*N*			*S*	
BASES				*U G I*	*T C A*				
ANNEXES		*Ph/sucre ARN*	*CONH*	*H2O*	*CH2 Ph/sucre ADN*				
ACIDES AMINES			*Asp*	*Asn Glu Gly Ser*	*Ala Gln His Thr*	*Pro Tyr Cys (+2)*	*Arg Phe Trp Val*	*Ile Leu Lys Met (+4)*	*Cys (+5) Met (+7)*
CODONS ADN	*ggg*	*gtg gcg gag tgg cgg agg ggt ggc gga*	*ttg ctg atg gtt gtc gta tcg ccg acg gct gcc gca tag cag aag gat gac gaa tgt tgc tga cgt cgc cga agt agc aga*	*ttt ttc tta ctt ctc cta att atc ata tct tcc tca cct ccc cca act acc aca tat tac taa cat cac caa aat aac aaa*					
CODONS ARN	*uuu uug guu gug ugu ugg ggu ggg*	*uuc uua cuu cug auu aug guc gua ucu ucg gcu gcg uau uag gau gag ugc uga cgu cgg agu agg ggc gga*	*cuc cua auc aua ucc uca ccu ccg acu acg gcc gca uac uaa cau cag aau aag gac gaa cgc cga agc aga*	*ccc cca acc aca cac caa aac aaa*					

▯ The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -IV- TUNING. *The optimized bio-atoms average atomic mass provides the perfect isotopes proportions balancing tuning of Life C O N H bio-atoms then of all DNA, RNA, amino acids components...*

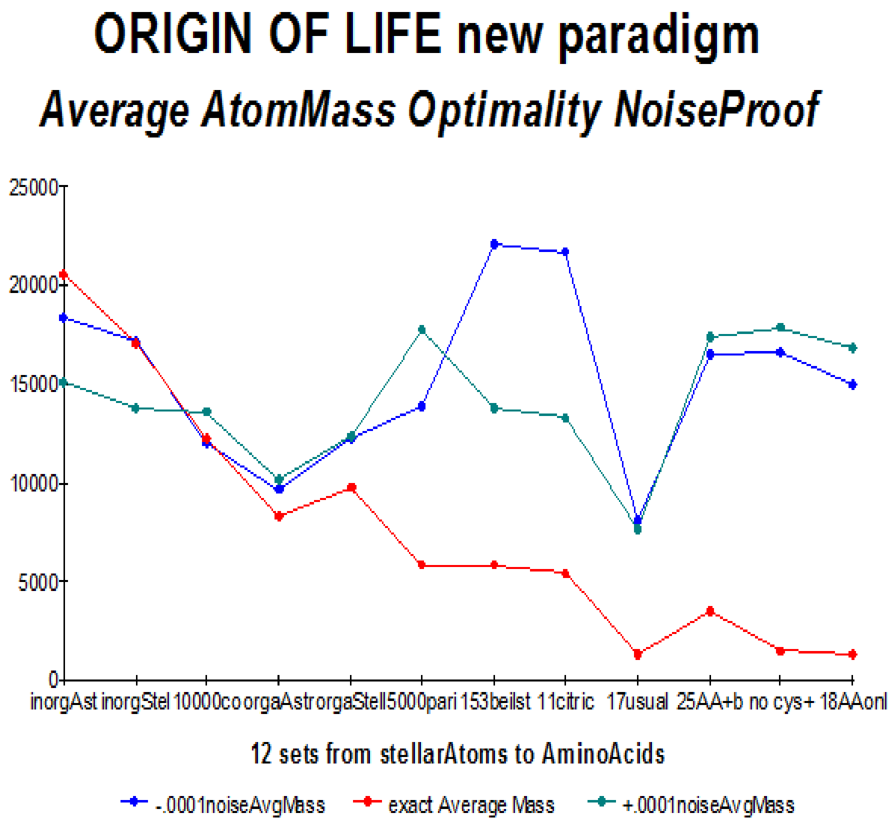
In other words: PROJECTION law is OPTIMAL for AVERAGE ATOMIC WEIGHTS



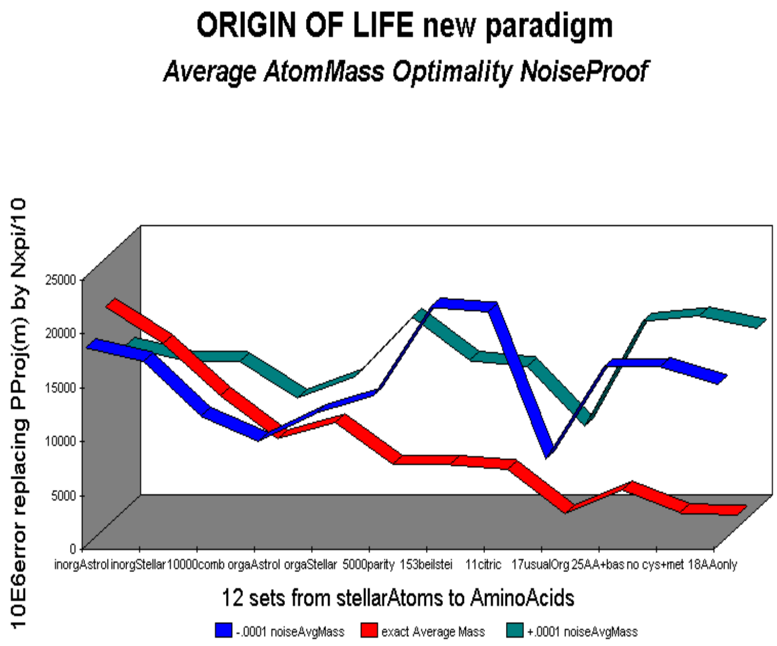
- **The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:**

<u>TIME -IV- TUNING.</u> *The optimized bio-atoms average atomic mass provides the perfect isotopes proportions balancing tuning of Life C O N H bio-atoms then of all DNA, RNA, amino acids components...*

In other words: PROJECTION law is OPTIMAL for AVERAGE ATOMIC WEIGHTS


ORIGIN OF LIFE new paradigm

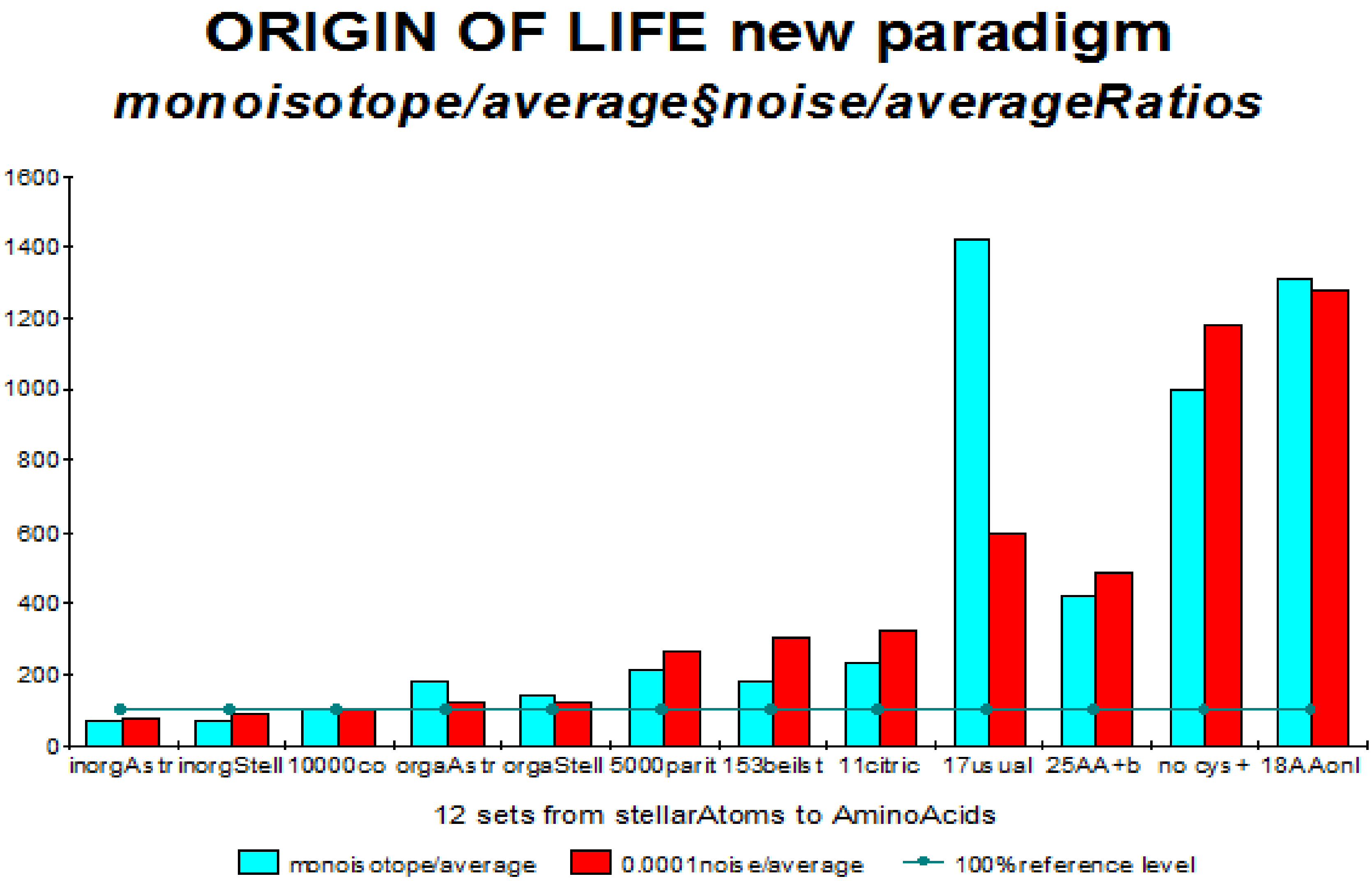
Average AtomMass Optimality NoiseProof


ORIGIN OF LIFE new paradigm

Average AtomMass Optimality NoiseProof

- **The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:**

TIME -IV- TUNING. *The optimized bio-atoms average atomic mass provides the perfect isotopes proportions balancing tuning of Life C O N H bio-atoms then of all DNA, RNA, amino acids components...* ***NOISE or MONO-ISOTOPE effect proof from STELLAR ATOMS... to Earth AMINO ACIDS...***



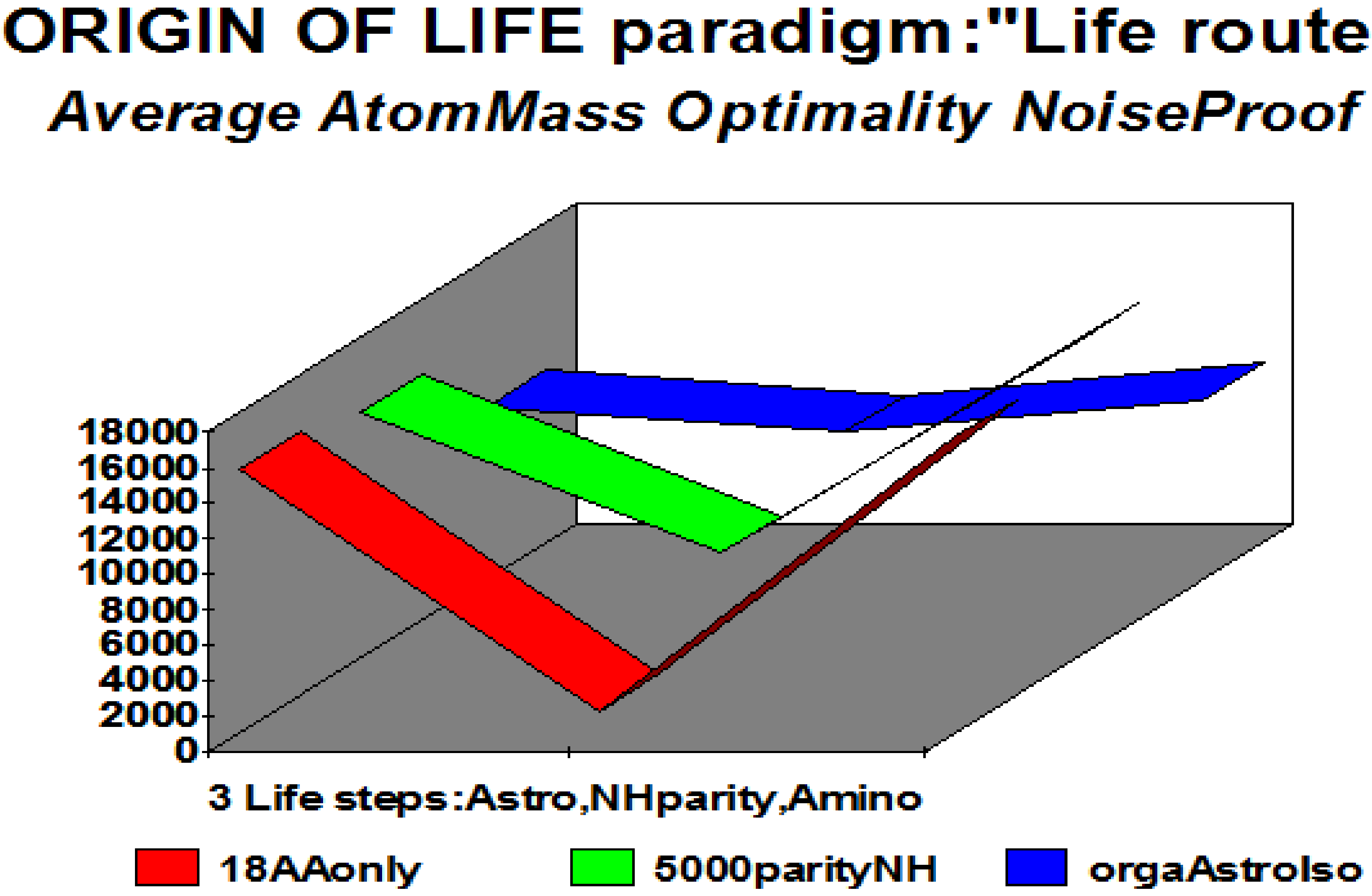
ORIGIN OF LIFE new paradigm

monoisotope/average§noise/averageRatios

The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -IV- TUNING. *The optimized bio-atoms average atomic mass provides the perfect isotopes proportions balancing tuning of Life C O N H bio-atoms then of all DNA, RNA, amino acids components...*

INCREASING OPTIMALITY AND NOISE EFFECT FROM ASTROBIOLOGY ATOMS TO ATMOSPHERIC AMINO ACIDS...

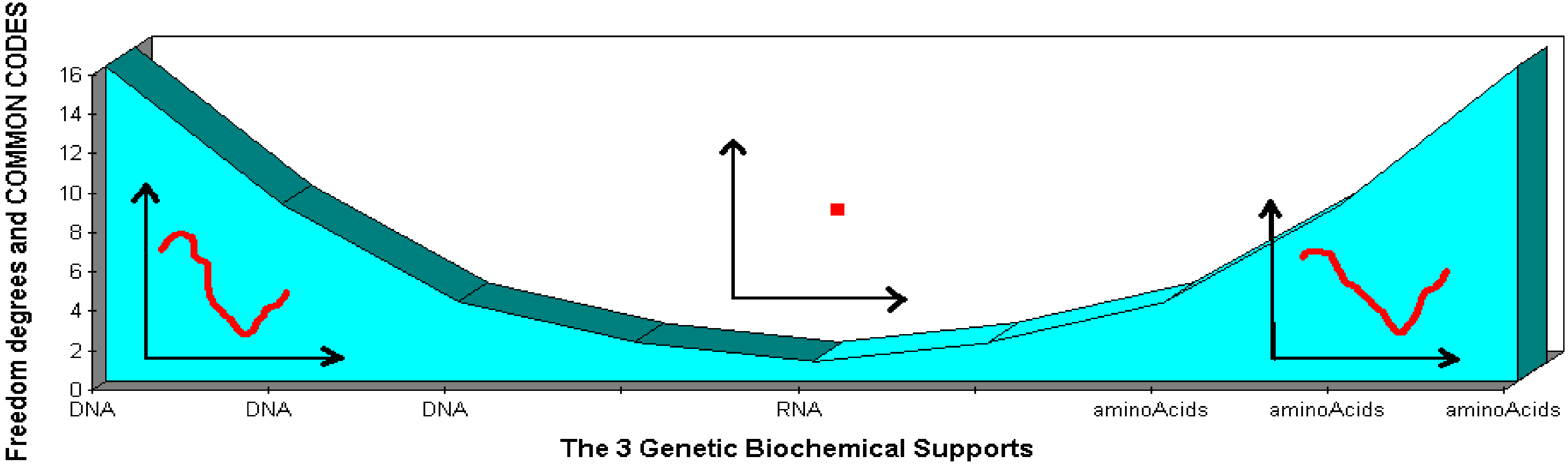


- **The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:**

TIME -V- THE GREAT UNIFICATION. *The DNA, RNA, amino acids GREAT UNIFICATION: CODING (Pi/10 whole numbers) the DNA double strand by codons and its RNA translation and its AMINO ACIDS codons translation (for non coding or coding DNA) provides DNA/AMINO ACIDS correlated patterns and unvariant pattern for RNA!*

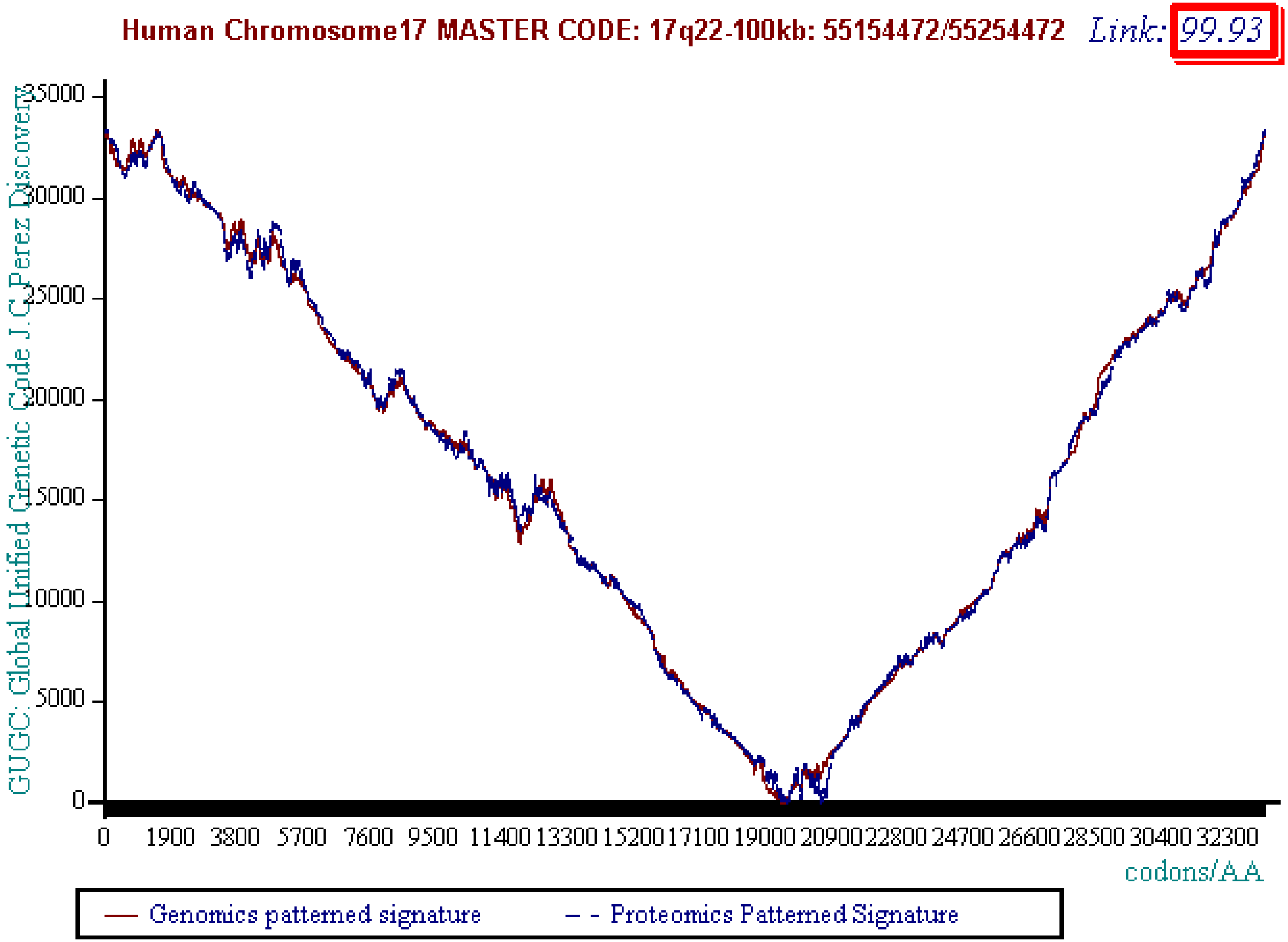
The "MASTER CODE": unifying Dna,Rna,AA

Mirror-like Dna/A.A and RNA fixed point



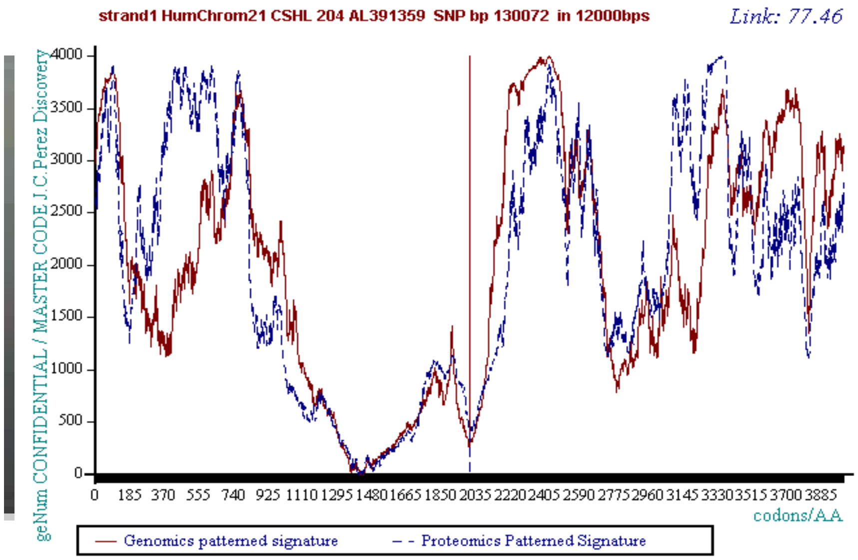
- **The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:**

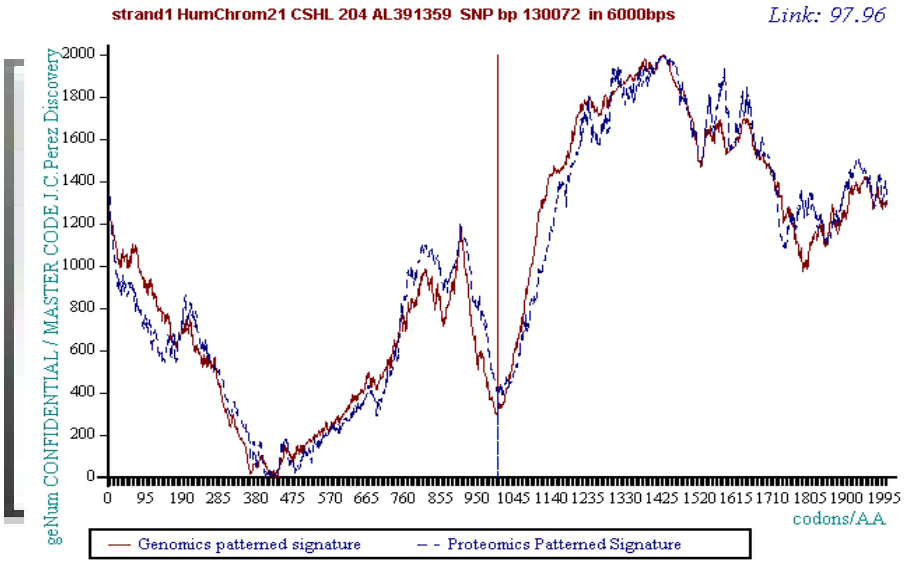
<u>TIME -VI- SYNCHRONIZATION.</u> *The DNA and double stranded patterned images are hightly CORRELATED (for non coding or coding DNA)... here an example for a region of HUMAN CHROMOSOME 17...*

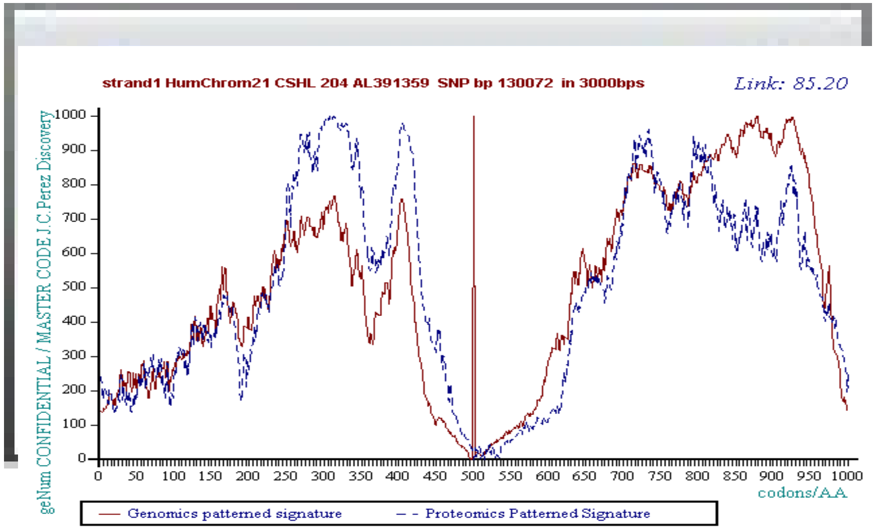


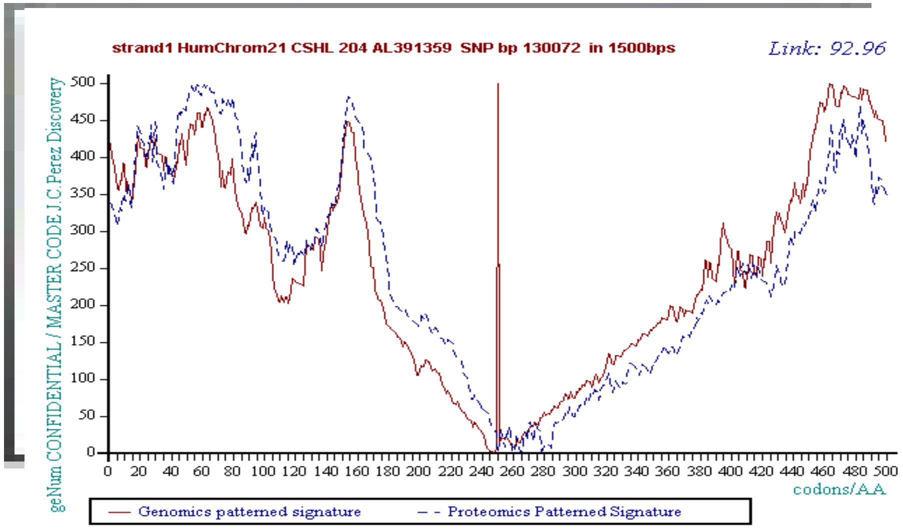
The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -VI- SYNCHRONIZATION. *The DNA and double stranded patterned images are hightly CORRELATED (for non coding or coding DNA)...here an example of zooms focusing on a SNP region of 12000bp 6000bp 3000bp 1500bp 750bp*





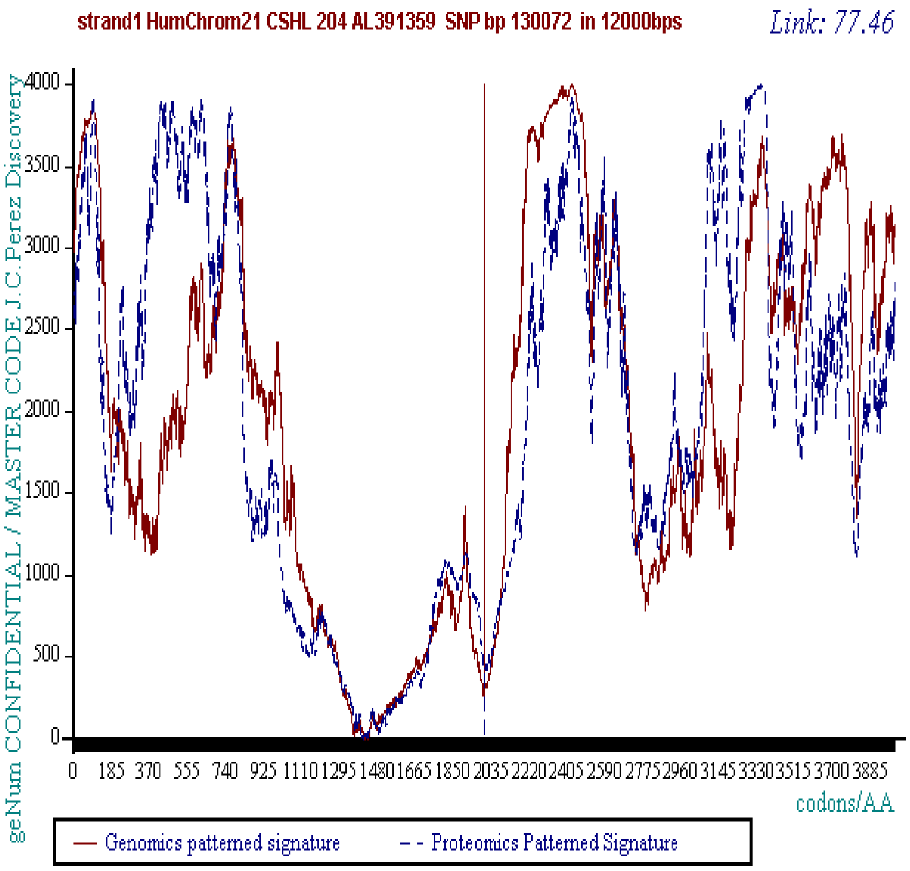


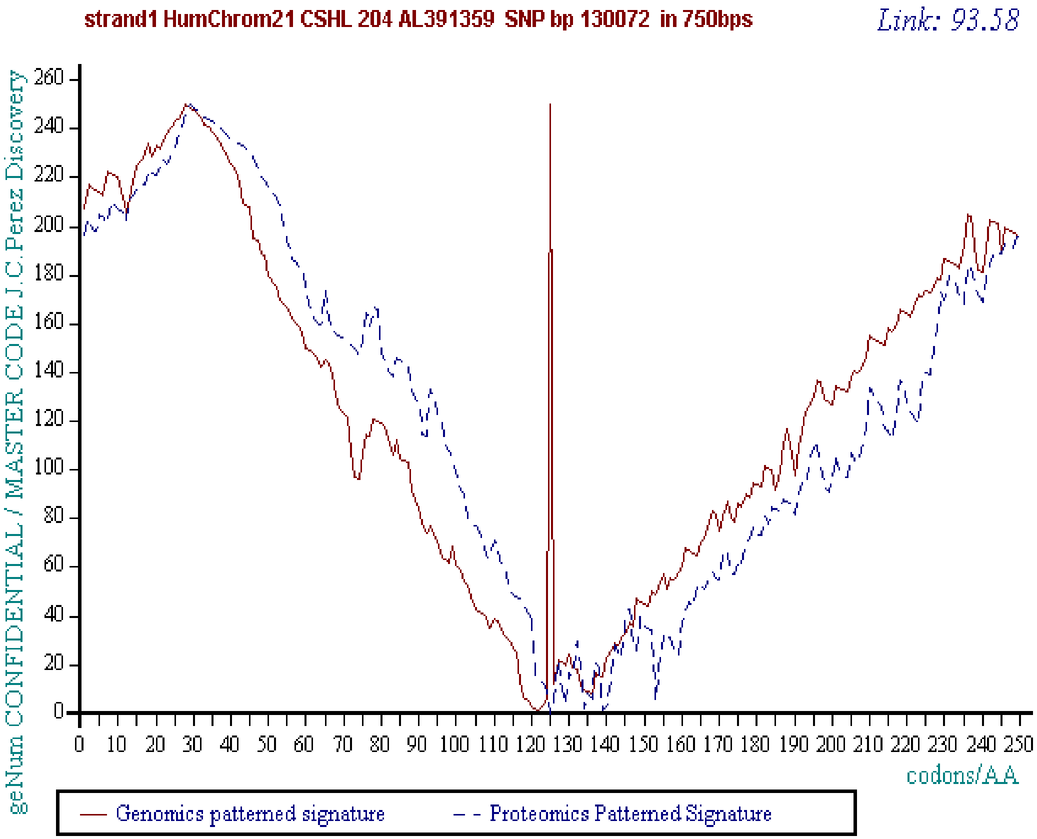


The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -VI- SYNCHRONIZATION. *The DNA and double stranded patterned images are hightly CORRELATED (for non coding or coding DNA)...here an example of zooms focusing on a SNP region of 12000bp then zoom on 750bp reveal a rule:*

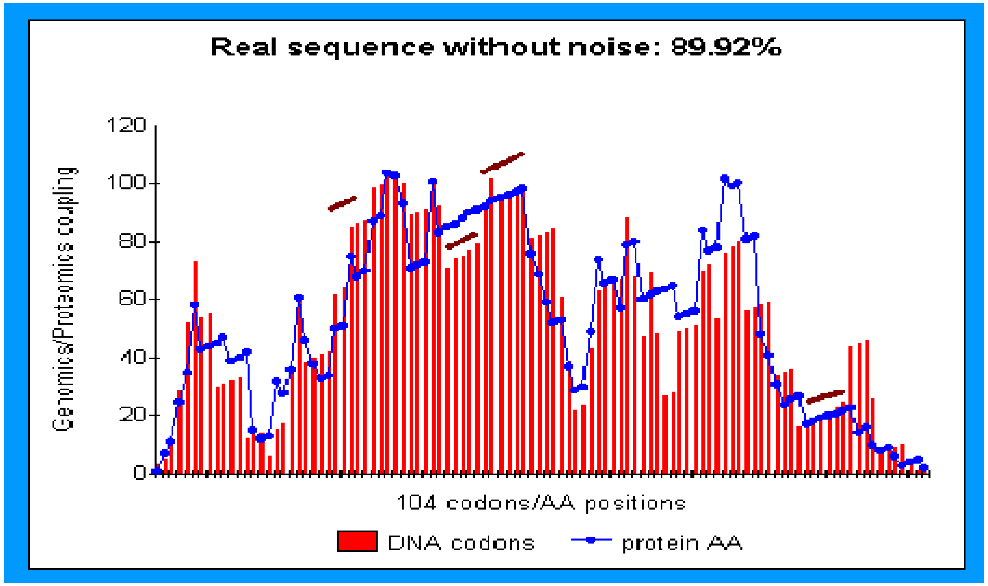
SNP are FUNCTIONAL principally by their LOCATION within GENOMIC DNA!



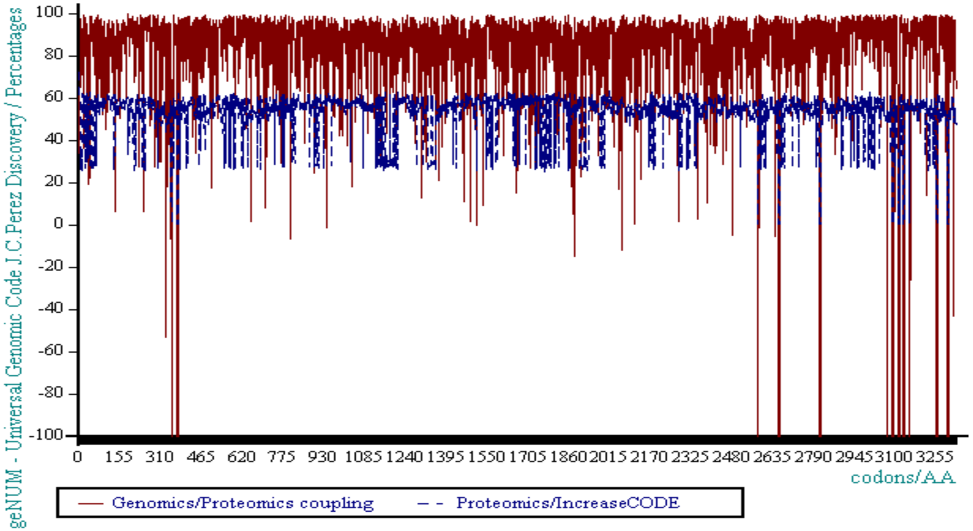


The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

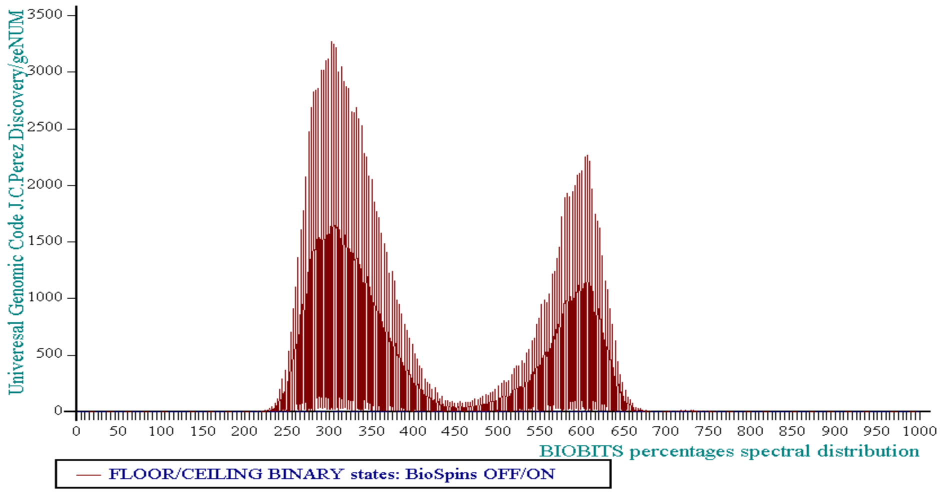
TIME -VII- DNA BINARY CODE DISCOVERY. ***The emergence of a "binary language" from any genomic DNA sequence:*** ***Analysing on 2D PROTEOMICS images patterns the INCREASE vs DECREASE local dynamics (discrete first order differenciation) then cumulating all increase/decrease values reveals 2 ATTRACTORS.***



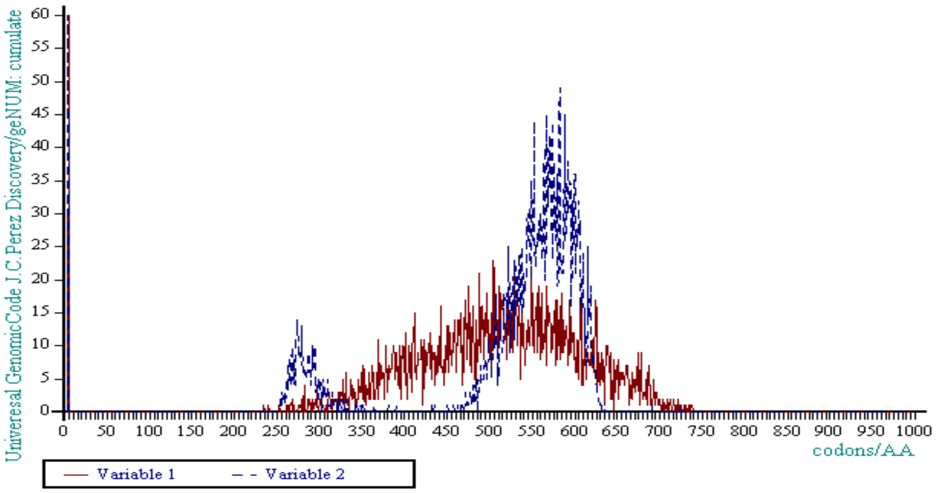
Universal Genomic Code: Whole Human Chromosome 22 - 33Mega-bases



GENOMES BINARY CODE: proof of BIOBITS around 2 attractors: HUMAN CHROMOSOME 4



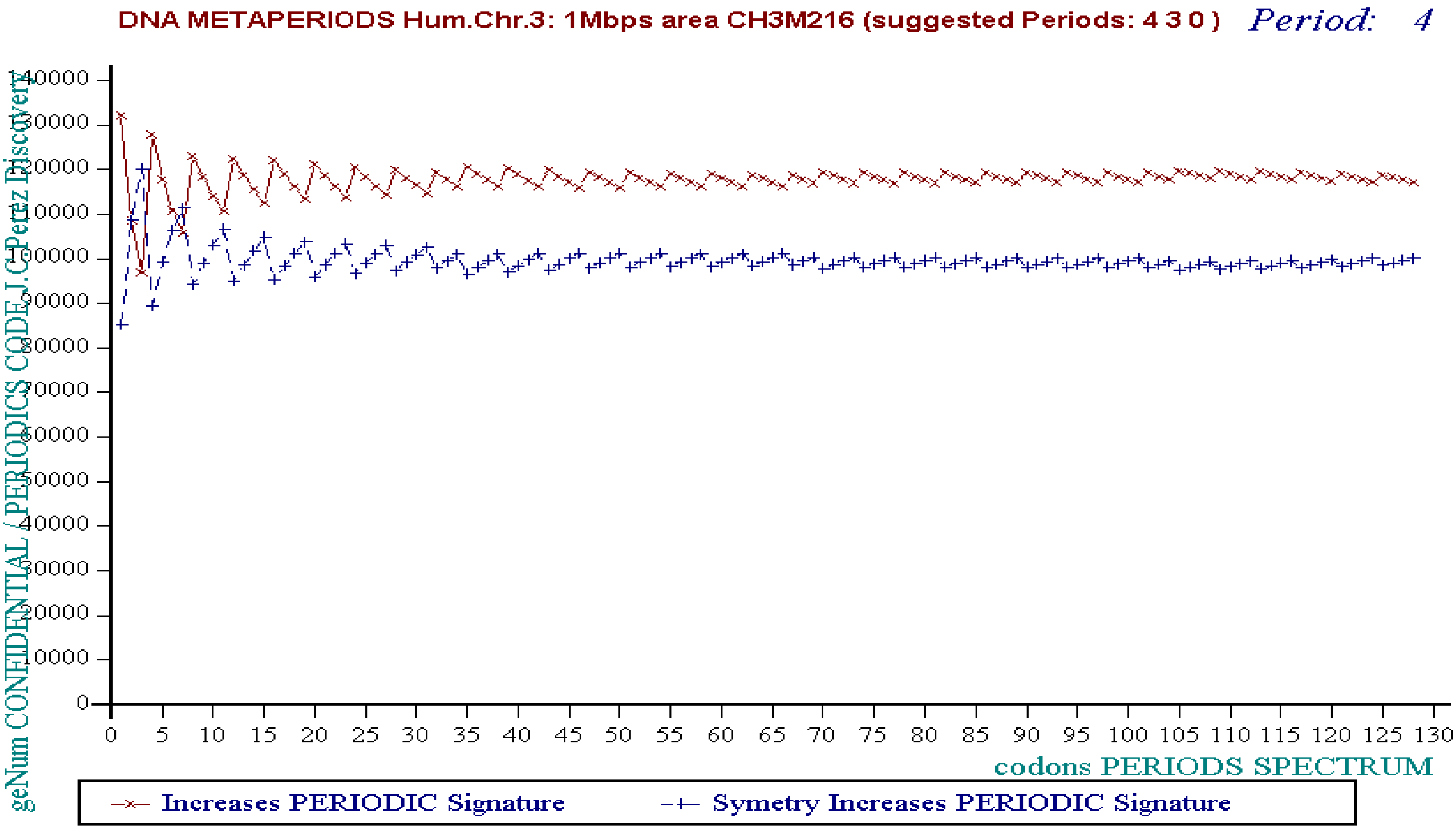
BI-SPECTRAL EVIDENCE: 1- Genomics/INCREASE CODE vs 2-Proteomics/INCREASE CODE wholeHGC22



▯ The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -VIII- DNA DISCRETE SPACIAL WAVES DISCOVERY. ***The emergence of a “WAVESFORMS based language” from any genomic DNA sequence:*** ***Analysing on 2D GENOMICS images patterns the INCREASE vs DECREASE local dynamics of distances 2 3 4... (discrete differenciations of order 2 3 4...) then cumulating all increase/decrease values reveals 2 ATTRACTORS modulated by WAVEFORMS.***

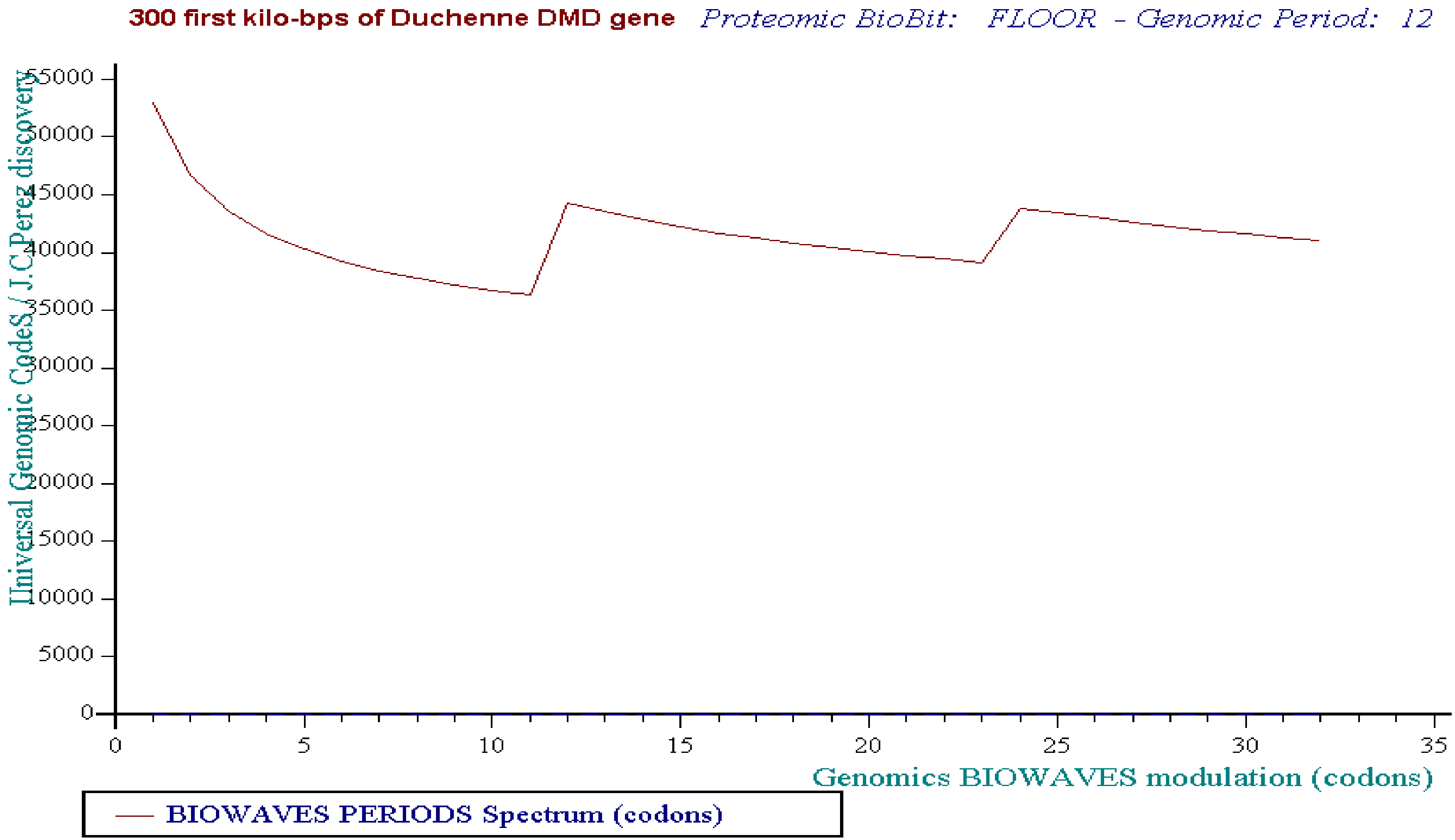
The emergence of undulatory discrete waves overlapping any genomic DNA sequence here example of period=4 in human chromosome



The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

<u>**TIME -VIII- DNA DISCRETE SPACIAL WAVES DISCOVERY.**</u> ***The emergence of a "WAVESFORMS based language" from any genomic DNA sequence:*** ***Analysing on 2D GENOMICS images patterns the INCREASE vs DECREASE local dynamics of distances 2 3 4... (discrete differenciations of order 2 3 4...) then cumulating all increase/decrease values reveals 2 ATTRACTORS modulated by WAVEFORMS.***

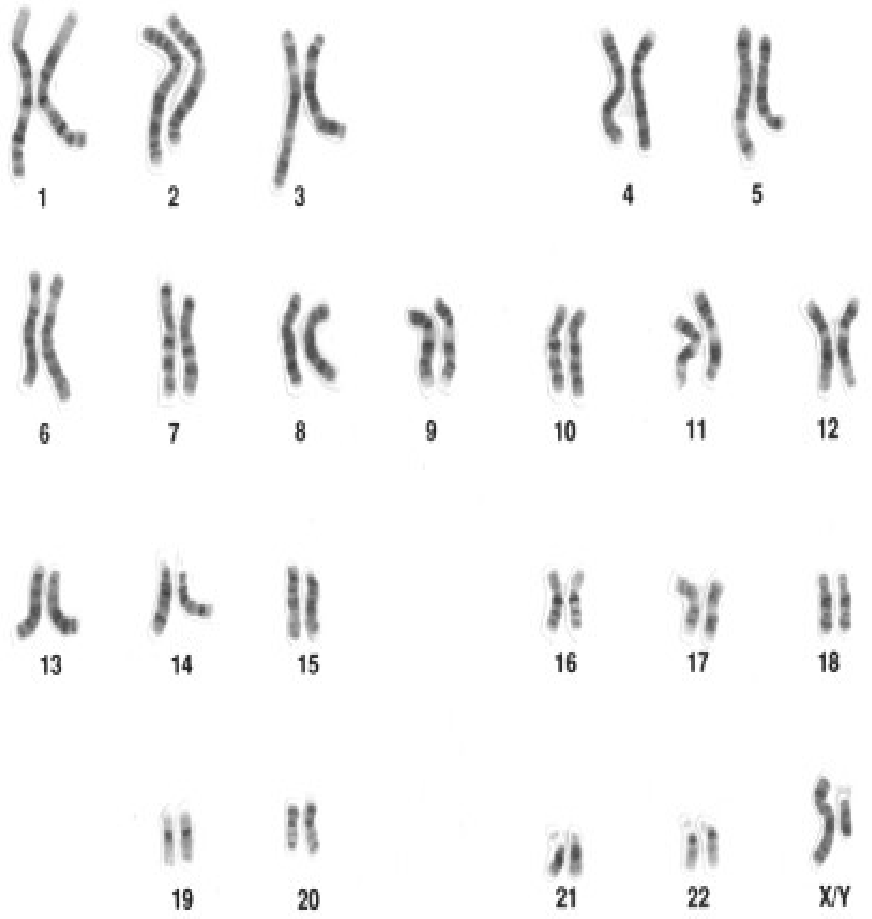
<u>**The emergence of undulatory discrete waves overlapping any genomic DNA sequence here example of period=12 in DMD DUCHENNE gene**</u>



The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -IX- INTERFERENCES BANDING.

The explanation of chromosomal alternated grey bands



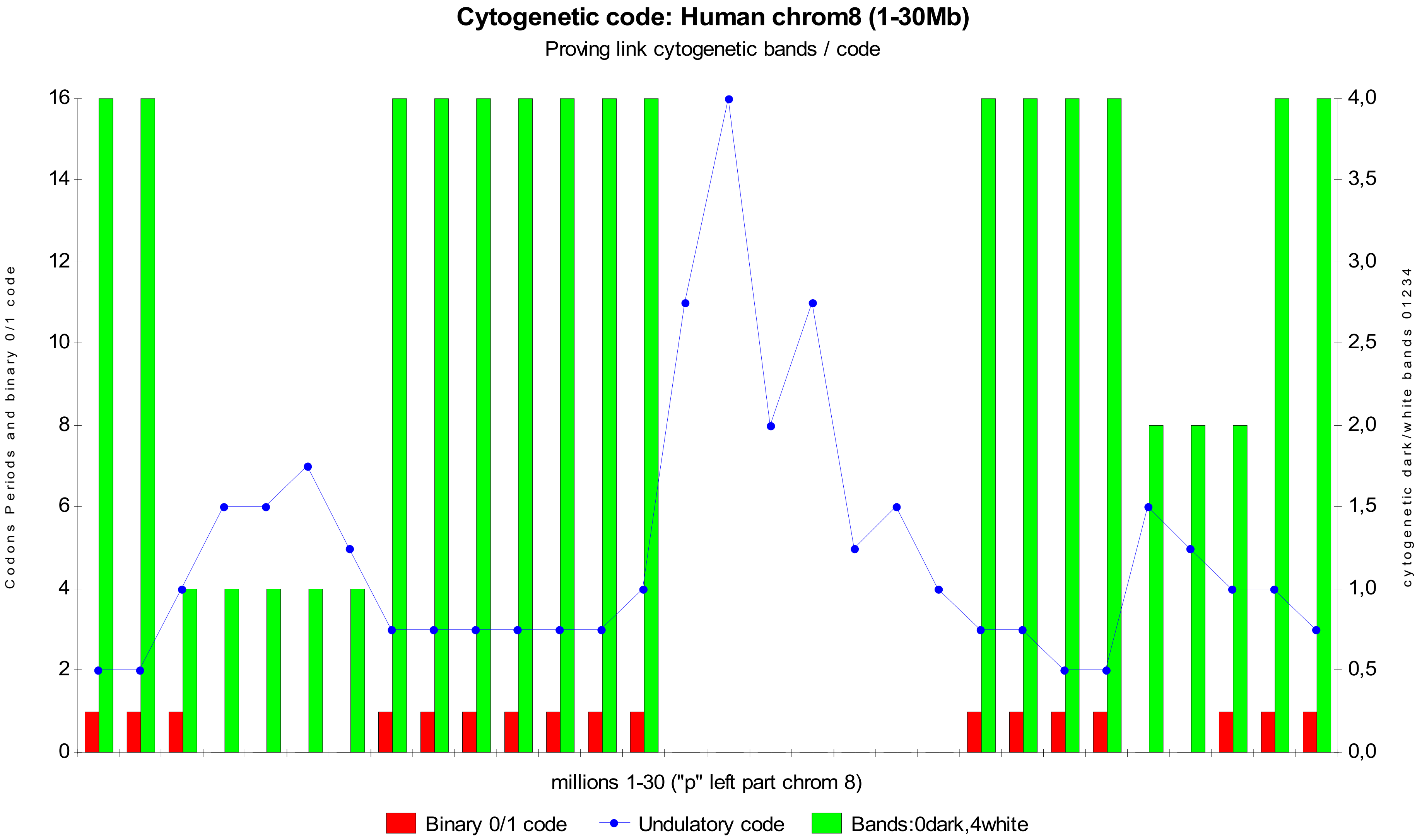
- Analysing such WAVEFORMS on the whole human genome reveals a perfect CORRELATION between the dark/light KARIOTYPES BANDS and the Hight frequencies (periods 2 3) and Low frequencies (periods 4 5 6...)
- From the WAVEFORMS analysis within all human genome double-stranded DNA GENOMICS patterned images.

The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME -IX- INTERFERENCES BANDING. *The explanation of chromosomal alternated grey bands: example in human chromosome 8 region: combining binary code and waveforms reveals kariotypes bands:*

binary code=1 and hight frequencies ==> WHITE bands

binary code=0 and low frequencies ==> DARK bands



Cytogenetic code: Human chrom8 (1-30Mb)

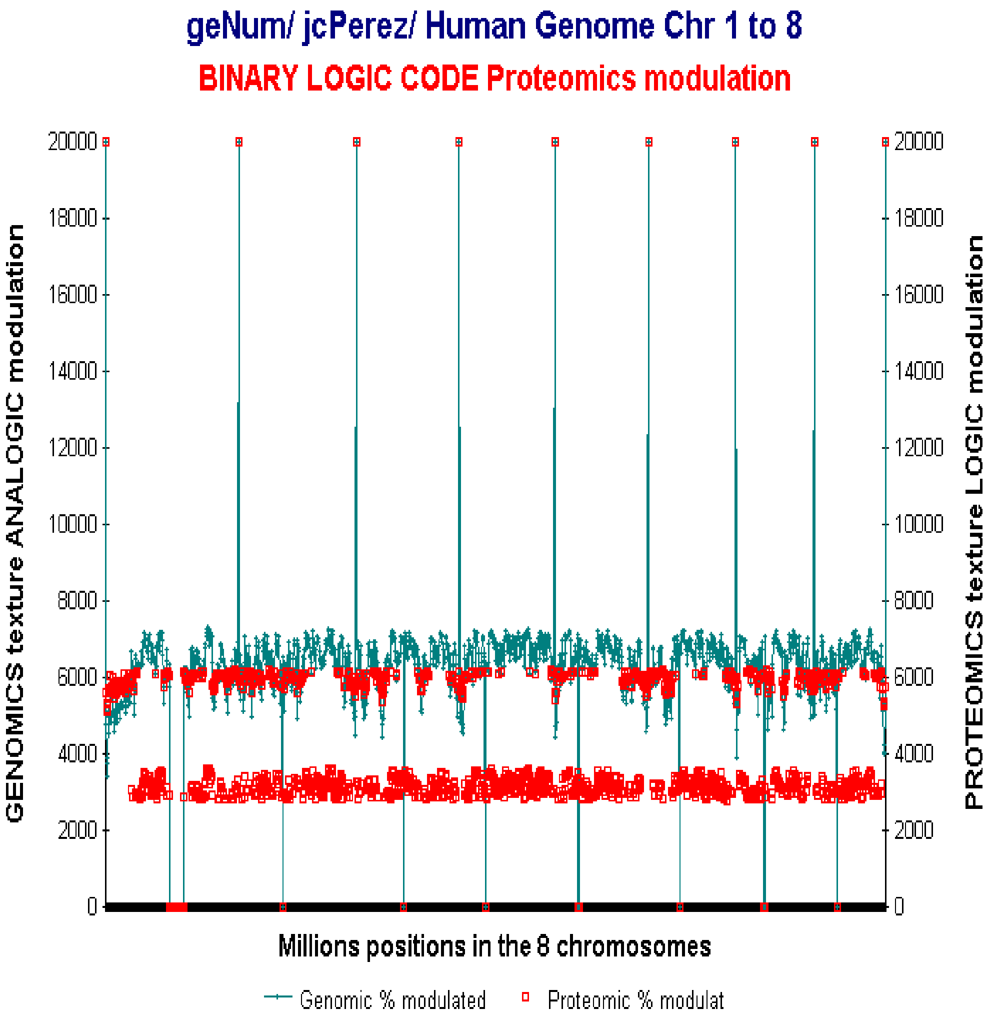
Proving link cytogenetic bands / code

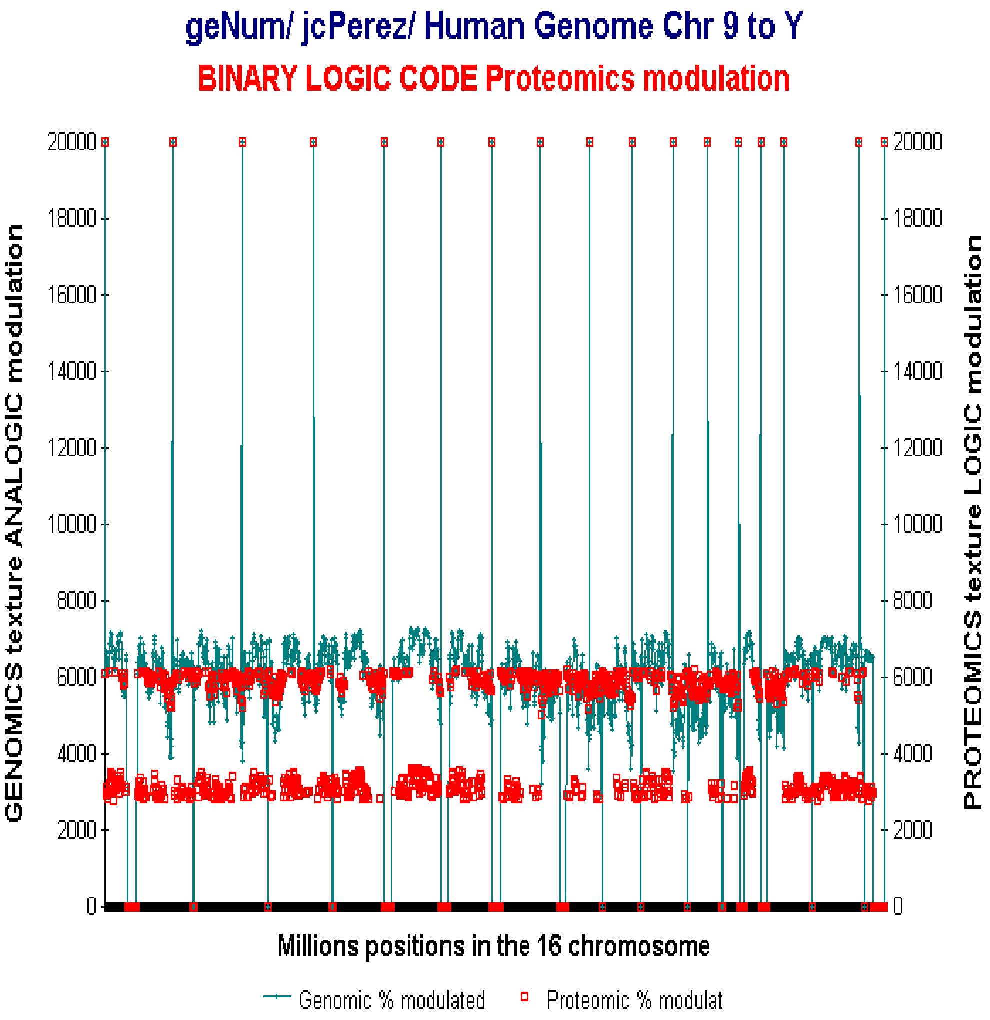
The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME X – GOLDEN RATIO CONTROLS THE WHOLE HUMAN GENOME...

The 2 “golden ratio” attractors of the whole human genome

The EVIDENCE of BINARY PROTEOMICS CODE(red) and MODULATED GENOMICS CODE (blue) at WHOLE HUMAN GENOME SCALE!



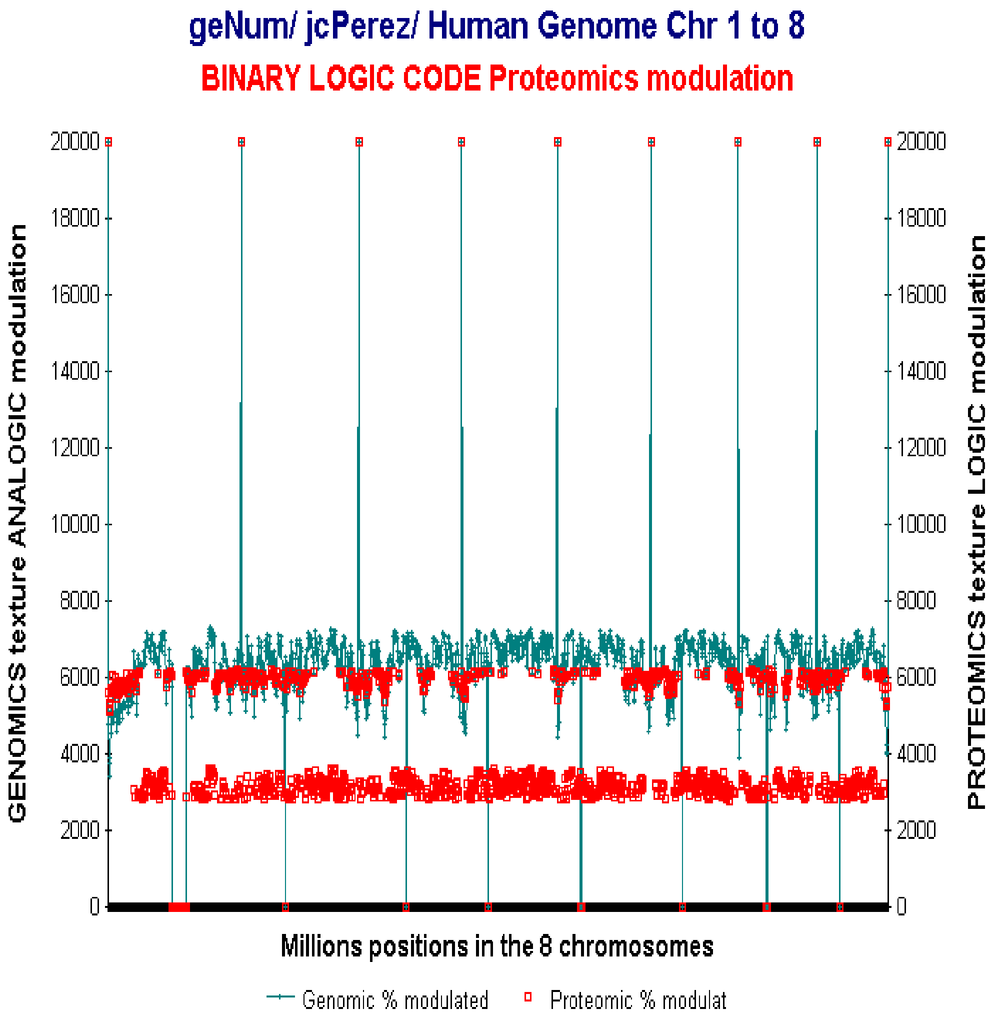


The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes:

TIME X – GOLDEN RATIO CONTROLS THE WHOLE HUMAN GENOME...

The 2 “golden ratio” attractors of the whole human genome

The EVIDENCE of BINARY PROTEOMICS CODE(red) and MODULATED GENOMICS CODE (blue) at WHOLE HUMAN GENOME SCALE!



The Whole Human Genome Binary Code:

“The whole Human Genome is controled by two BINARY CODES ATTRACTORS which provide a kind of self-organized bistable binary code ... like in computers! With the central following difference:

-the binary code within computers was invented artificially by humans...

-the binary code of DNA has “emerged” spontaneously ...

MEANWHILE, there is a fact:

-The ratio between both bistable states is exactly equal to “2” (the space between two consecutives octaves in Music...)

-The Top state is exactly matching with GOLDEN RATIO...

-The Bottom state is also exactly related to Golden Ratio...

« Top » level = phi = 1 / PHI

« Bottom » level = phi / 2 = 1 / 2 PHI

Top / Bottom = 2

Where PHI is the « Golden Ratio”...

The great Unification: Unifying DNA, RNA and Amino acid worlds from bioatoms to whole Genomes: Part III - FUTURES:

Perspectives in Luc Montagnier's « *DNA Waves and Water* » breakthrough Luc Montagnier ,Lindau NOBELS conference, 28 June, 2010 - DNA BETWEEN PHYSICS AND BIOLOGY: « DNA WAVES AND WATER »

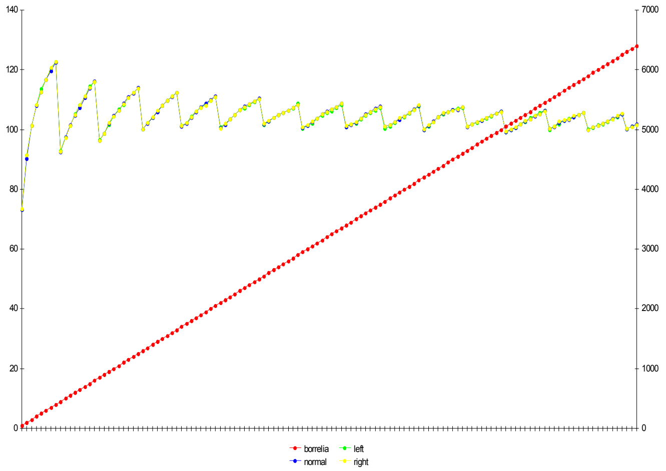
2 strong relations between our research and DNA waves and water results:
« 7.83 Hertz Schumann Earth background Resonance and DNA spatial waveforms strong relationships »

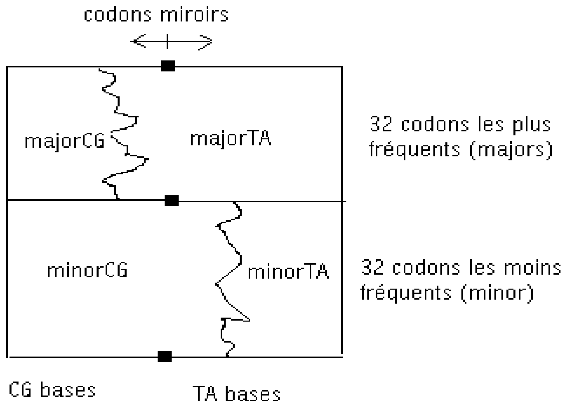
In its Nobel Lindau conference, Pr Montagnier reports emergence of electromagnetic waves for specifics DNA like HIV genes but, in others cases, like LACTOBACILLUS bacteria, these waveforms are not observed. Secondly, these waves are only observed when they are « boosted » by the earth atmospheric ground waveform: SCHUMANN RESOMANCE = 7.83 Hertz. Then we correlated both facts with our research:

1/ we associated **Montagnier's waves ON with our LOW FREQUENCIES** (exp HIV or BORRELIA top right high frequencies image shows a 8 codons low frequency period) and **Montagnier's waves OFF with our HIGH FREQUENCIES** (exp LACTOBACILLUS bottom right high frequencies image shows a 3 codons high frequency period). As described in the CODEX BIOGENESIS book (jc perez 2009), HIGH FREQUENCIES are 2 or 3 codons periods waves and 4 5 6...12... are LOW FREQUENCIES.

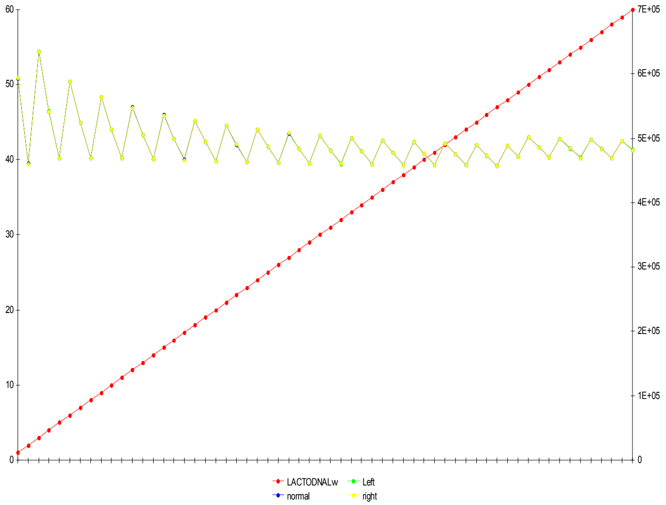
2/ 7.83 Hertz Schumann Earth background Resonance and DNA strong relationships: In the whole HUMAN GENOME single stranded DNA, if we consider 2 clusters of 32 codon populations each, the most frequent (Q1+Q2) is exactly 2X as numerous as the least frequent of the 32 codons (Q3+Q4) . Exact ratio is 1.995859355...This fact is ALSO verified at atomic weights level. Then, what about TA versus CG quartiles composition? Now we call these 4 quartiles: MajorTA minorTA MajorCG and minorCG.

(Major TA x minor CG) / (minor TA x Major CG) = 3.8184783551 = Schumann resonance / (Phi x racine Phi) and also: (Major CG x minor TA) / (minor CG x Major TA) = Schumann resonance / 30 = 0.261. In both cases, relative errors are around 1/10000.





(majorCG / minorCG) / (majorTA / minorTA) = Phi2/10



BIT Life Sciences' 3rd World Congress of Vaccine
Beijing·China

Session Name: Section 2-2-1: Bioinformatics, Antigen Design, and Vaccine Development

Decoding non-coding Dna Codes:
Human Genome
Meta-Chromosomes Architecture

*Dr. Jean-Claude Perez** Individual Researcher, Bordeaux, France

*ACKNOLEDGEMENTS to Pr **Luc Montagnier** FMPRS*
World AIDS Foundation UNESCO
*and **Jean-rené Fourtou** Vivendi Universal chairman*

More on: http://golden-ratio-in-dna.blogspot.com/