GenXPro

GENome-wide eXpression PROfiling

seeera net plus PLUS.SEE-ERA.NET

repsee REGIONAL PROGRAMME FOR COOPERATION WITH SOUTHEAST EUROPE

Partner 17

GenXPro

Genes never seen before…

Frankfurt am Main, Germany

Peter Winter, CEO

GenXPro

GENome-wide eXpression PROfiling

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Genome & Transcriptome Analyses

Transcriptome :

- SuperSAGE/ST-DGE or MACE (quantitative information)
- Normalization of cDNA libraries (qualitative information)
- RNAseq
- small RNAs/microRNA
- other non-coding RNAs
- qPCR service

Genome:

- Digital karyotyping (ST-DK), RCS, CNVs
- Methylation-specific DK (ST-MSDK)
- Genetic Markers
- Target Enrichment
- Whole-genome Sequencing

Metagenomics:

-COXI, 16s rRNA, others...

Bioinformatics:

- NGS Data Handling, Assembly, Quantification, BLAST
- Expression Data Interpretation: Functional analysis

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NGS platforms employed

ROCHE 454

Illumina Highseq 2000

ABI Solid 3

Reads	1 Mio	80 Mio	50 Mio
Length	350-1000 bp	50-100 bp	50 bp
Subunits:	8	8	8

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Genes never seen before…

Objective

To assess the

Genetic variability in potential resistance genes in 48 chickpea accessions from 4 South-East European countries and Turkey.

Sub-Project status:

- **Not yet started**
- **Material from collections required**

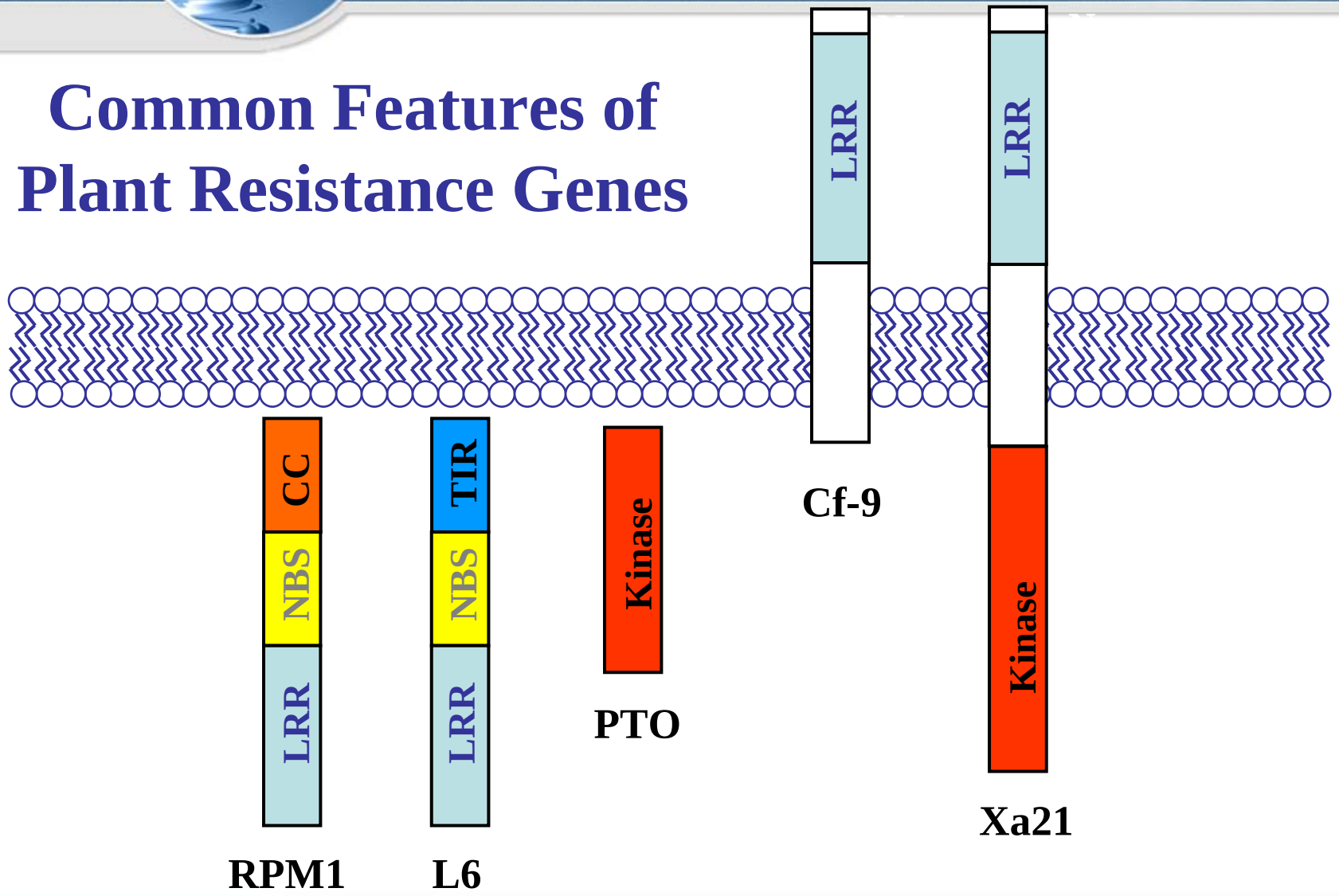
Overview of GenXPro Contribution:

Total budget	**14.228 €**
EU-Contribution:	**10.956 €**
Funding:	**77 %**

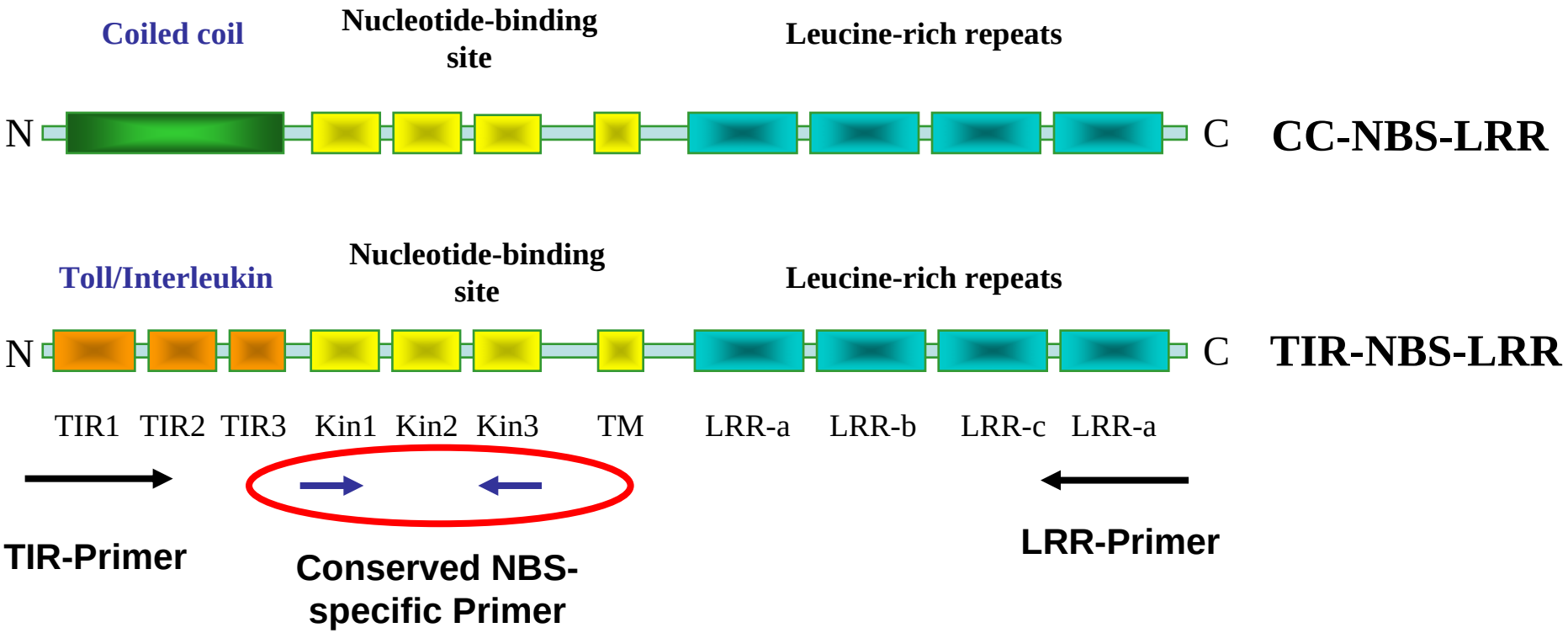
Plant Resistance (R) Genes:

- Among fastest evolving sequences in the genome.
- Genetic diversity reflects the co-evolution of plant host and pathogens
- Variability enables to estimate the pathogen pressure in their habitat
- Enables to stratify chickpea collections according to relevant molecular factors
- Most R-genes are receptor-like protein kinases with highly conserved domains

Common Features of Plant Resistance Genes



Conserved Features in the NBS-type R Proteins



www.ncgr.org/rgenes: Multilevel Consensus of Conserved Domains of the NBS-type R Genes

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Chickpea samples

A/A	Country of Origin	Pool	Index	A/A	Country of Origin	Pool	Index
1	GREECE	Pool A	RL 13	31	Greece	Pool B	RL 13
2	Greece	Pool A	RL 14	32	Bulgaria	Pool B	RL 14
3	Greece	Pool A	RL 15	33**	Bulgaria	Pool B	RL 15
4	Greece	Pool A	RL 16	34**	Bulgaria	Pool B	RL 16
5	Greece	Pool A	RL 17	35**	Bulgaria	Pool B	RL 17
6	Greece	Pool A	RL 18	36**	Bulgaria	Pool B	RL 18
7*	Greece			37	Bulgaria	Pool B	RL 19
8	Greece	Pool A	RL 19	38	Bulgaria	Pool B	RL 20
9	Greece	Pool A	RL 20	39**	CROATIA	Pool B	RL 21
10	Greece	Pool A	RL 21	40*	SLOVENIA		
11	Greece	Pool A	RL 22	41	BULGARIA	Pool B	RL 22
12	BULGARIA	Pool A	RL 23	42	FYROM	Pool B	RL 23
13	Bulgaria	Pool A	RL 25	43*	Fyrom		
14*	Bulgaria			44*	Fyrom		
15	Bulgaria	Pool A	RL 26	45**	Fyrom	Pool B	RL 25
16	BULGARIA	Pool A	RL 28	46**	GREECE	Pool B	RL 26
17*	CROATIA			47	Greece	Pool B	RL 28
18*	Croatia			48**	Greece	Pool B	RL 30
19*	FYROM			49	Greece	Pool A	RL 6
20*	Fyrom			50	Greece	Pool A	RL 7
21*	Fyrom			33.2**	Bulgaria	Pool B	RL 31
22*	Fyrom			34.2**	Bulgaria	Pool B	RL 32
23*	Fyrom			35.2**	Bulgaria	Pool B	RL 33
24*	Fyrom			36.2**	Bulgaria	Pool B	RL 34
25	Fyrom	Pool A	RL 30	39.2**	Croatia	Pool A	RL 1
26	Fyrom	Pool A	RL 31	41.2**	Bulgaria	Pool A	RL 2
27	Fyrom	Pool A	RL 32	45.2**	Fyrom	Pool A	RL 3
28	Fyrom	Pool A	RL 33	46.2**	Greece	Pool A	RL 4
29*	FYROM			48.2**	Greece	Pool A	RL 5
30	Greece	Pool A	RL 34				

*sample missing

**more than one sample

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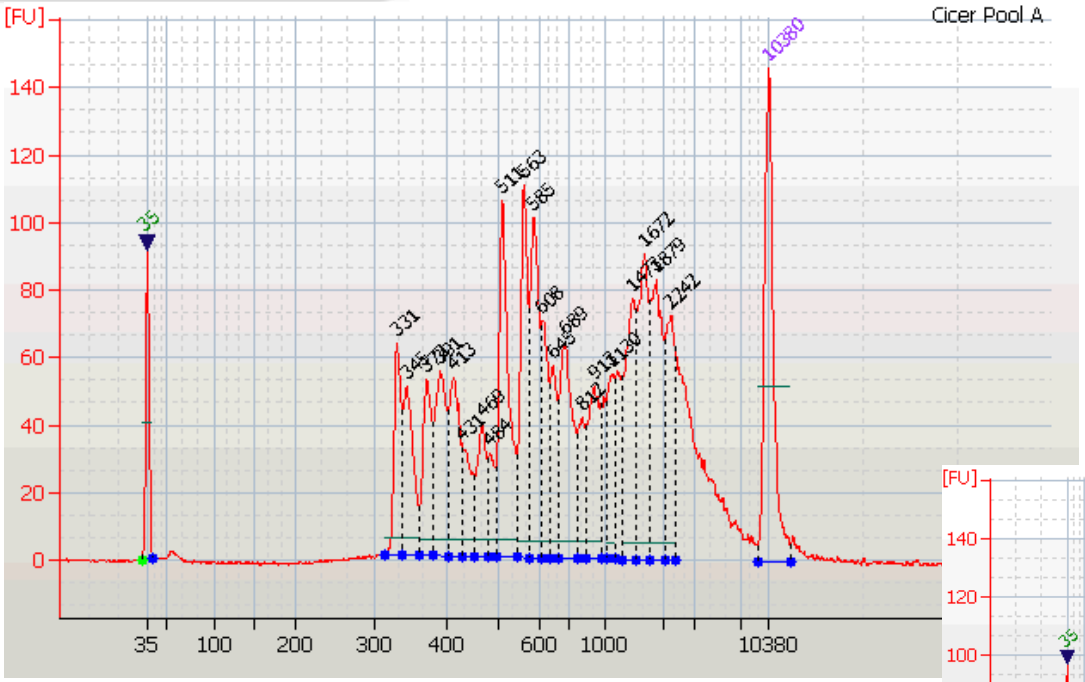
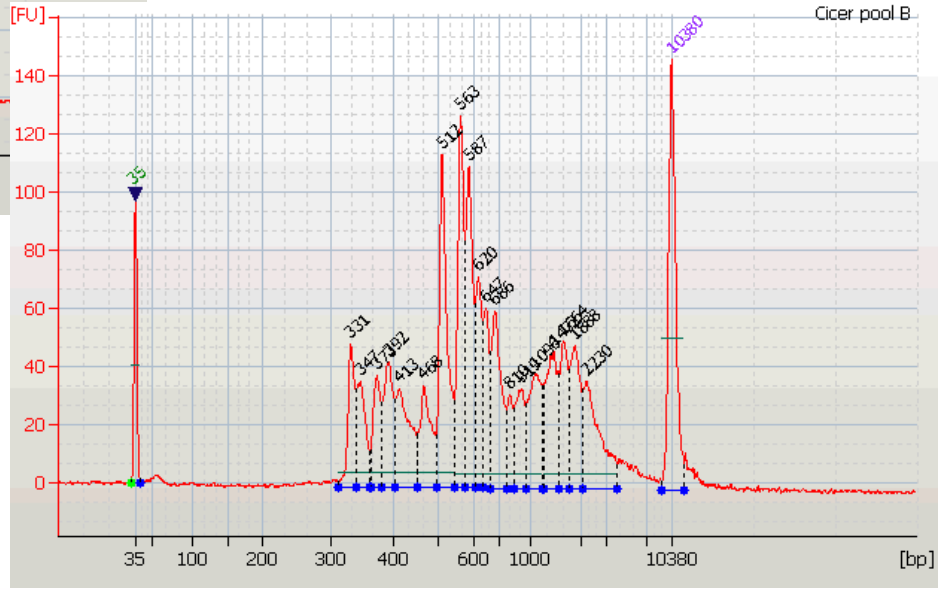
Results so far





Results so far

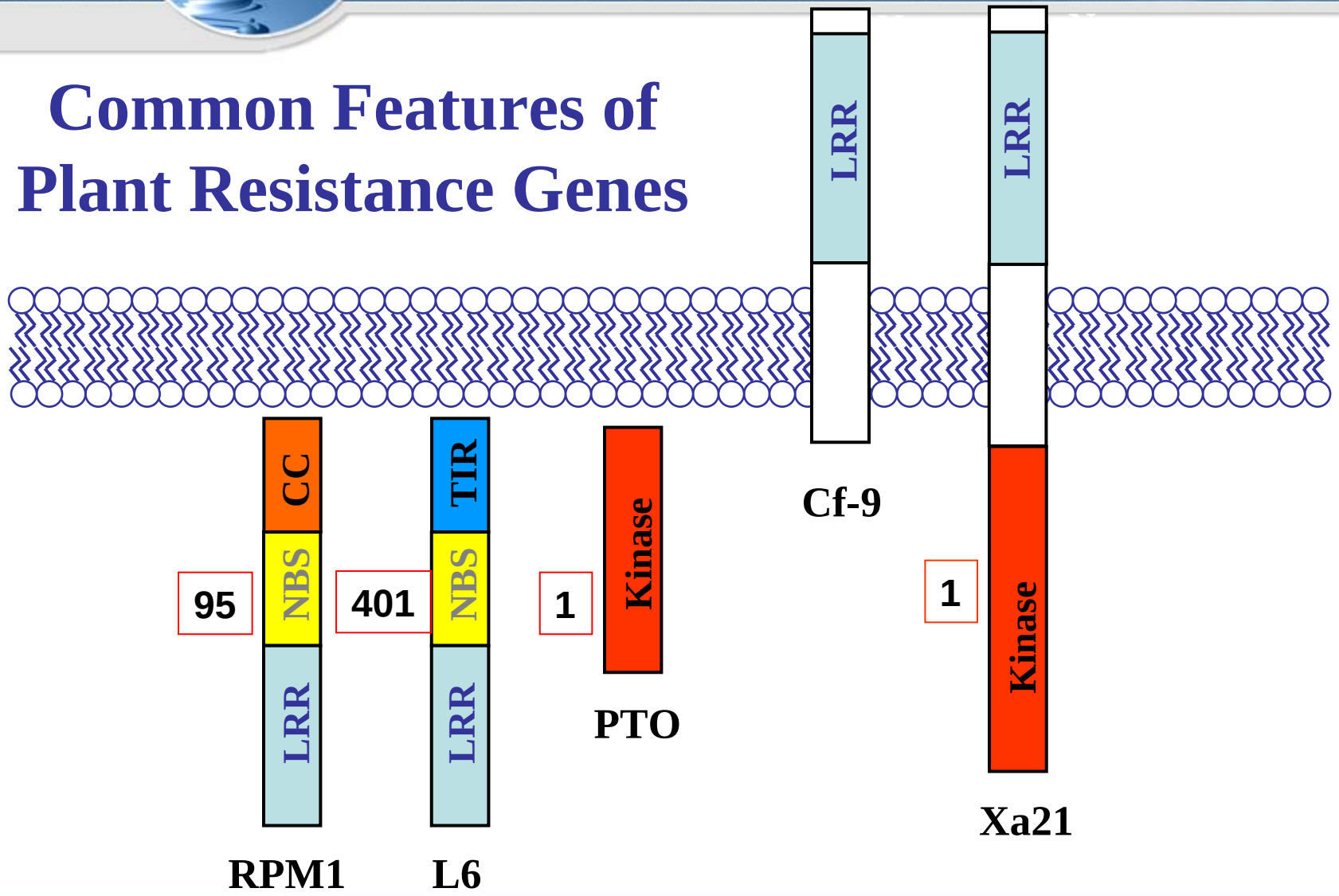
ROCHE 454

General informatio about the sequencing	
	Read Numbers
454 sequenced reads	28.282
Reads longer than 150 bp	7.692

Results so far

General informatio about the sequencing		
	Homology	Read Number
454 sequenced reads		28282
Reads longer than 150 bp		7692
R-gene classes		4
	Pto	1
	RLK	1
	CNL	95
	TNL	401
Total 454 reads in R-groups		498

Common Features of Plant Resistance Genes



Conclusions:

1) No phylogenetic tree possible with current data
2) DNA samples need to be revised
3) Appro. 7 % of reads were from potential R-Genes
4) DNA clean-up after amplification necessary for longer reads
5) Approx. 5 million Illumina sequence reads should be added

Thank You for Your Patience!

Please visit our web page at:

www.genxpro.de

Sunday, 23 September 2012

Arrival of participants

Monday, 24 September 2012

9:00-9:45 **Welcome addresses**

a. NAGREF, ARCNG representative

b. Aristotle University of Thessaloniki, School of Agriculture representative

c. SEELEGUMES Project Coordinator

9:45-10:15 **Introduction** (Branko Cupina, Aleksandar Mikic)

- Update on SEELEGUMES
- Activities since 1st SEELEGUMES Workshop
- Overview of the present Workshop: aims and schedule

SEELEGUMES 2nd Workshop
23-26 September 2012
Thessaloniki, Greece

10:15-11:00 **Research Activities**

Presentation of project results for the two year period by each participant *(15 min per presentation)*

Tuesday, 25 September 2012

11:00-11:30 *Coffee break*

9:00-10:00 Overview of financial issues

11:30-14:00 **Research Activities** *(15 min per presentation)*

14:00-15:00 *Lunch break*

10:00-11:00 Report of financial issues by each participant and discussion

15:00-16:30 **Research Activities** *(15 min per presentation)*

11:00-11:30 *Coffee break*

16:30-17:00 *Coffee break*

11:30-14:00 Report of financial issues by each participant and discussion

17:00-18:00 **Research Activities** *(15 min per presentation)*

14:00-15:00 *Lunch break*

15:00-17:00 Conclusions

18:15 *Departure for sightseeing of Thessaloniki*

20:00 *Dinner at the center of Thessaloniki*

- Project Results-Report due date
- Financial issues- Report due date
- Dissemination of project results

17:00-18:00 Free time

18:00 *Departure to the center of Thessaloniki*

18:30-20:30 *Farewell dinner at the center of Thessaloniki*

Wednesday, 26 September 2012

Departure of participants