

## AN ONGOING HIV OUTBREAK AMONG INTRAVENOUS DRUG USERS IN GREECE: PRELIMINARY SUMMARY OF SURVEILLANCE AND MOLECULAR EPIDEMIOLOGY DATA.

D. Paraskevis and A. Hatzakis.

National Retrovirus Reference Center, Department of Hygiene, Epidemiology and Medical Statistics, Medical School, University of Athens

### A. Surveillance Data

During January – May 2011, 69 intravenous drug users (IVDUs) cases were reported in the HIV/AIDS National Surveillance System while the annual number of reported cases from 2001-2010 ranges from 9-19 (FIGURE 1). This change represents a 10-fold increase of the incidence rate. In the first 5 months of 2011, 384 new HIV/AIDS cases were reported which represent a 30% increase compare to the years 2009 – 2010 (FIGURE 2). IVDU explain 50% of the current HIV/AIDS increase. Among 69 intravenous drug users, 43 (62%) were reported as Greek origin, 10 (15%) as immigrants while in 16 (23%) the ethnicity status was unknown. The great majority of IVDUs live in Athens Metropolitan Area.

### B. Molecular epidemiology data

**Methods:** In order to identify whether HIV-1 epidemic spreads among IVDUs through local IVDU networks, we performed phylogenetic analyses on HIV-1 sequences sampled from IVDUs (n=110) collected during 1999-2011. We included sequences from a large number of HIV-1 infected individuals in Greece (approximately n=2000) sampled over the same time period and HIV-1 isolates sampled globally. Phylogenetic analysis was performed using Neighbor-Joining (NJ) method.

**Results:** Phylogenetic analysis including reference strains from different subtypes revealed that the prevalence of HIV-1 subtypes was as follows:

Subtype B: 50/110 (45%), subtype A: 44/110 (40%), subtype G: 2/110 (2%) others: 16/110 (14%)

Phylogeographic analysis of the HIV-1 epidemic among IVDUs showed:

Subtype B sequences from 41 out of 48 IVDUs (85%) did not form clusters with sequences from other IVDUs from Greece. Seven sequences (15%) fell within three separate small IVDU networks (2 clusters of 2 sequences and 1 cluster consisting of 3 IVDUs). The cluster consisting of 3 sequences had a Greek origin, while the other two small ones the origin was from other European countries.

Subtype A sequences from 27 out of 43 IVDUS (63%) did not form clusters with sequences from other IVDUs from Greece, while sequences from 16 (37%) IVDUs belonged to three networks: a single cluster of 11 sequences and 2 other consisting of 2 and 3 sequences (FIGURES 3,4). The largest network originated from Asia; the single cluster of 3 sequences originated from the former Soviet Union (FSU) countries and the other one from Greece.

- Until 2009, 3 out of 58 IVDUs (5%) belonged to IVDU clusters. The origin was from other European countries (TABLE).
- In 2010, 4 out of 10 IVDUs (40%) fell within IVDU clusters (3 from FSU and 1 from other European countries).
- In 2011, 18 out of 20 sequences (90%) found to belong to IVDU networks. The origin was from Asia (11 cases), Greece (5 cases) and Africa (2 cases) (TABLE)

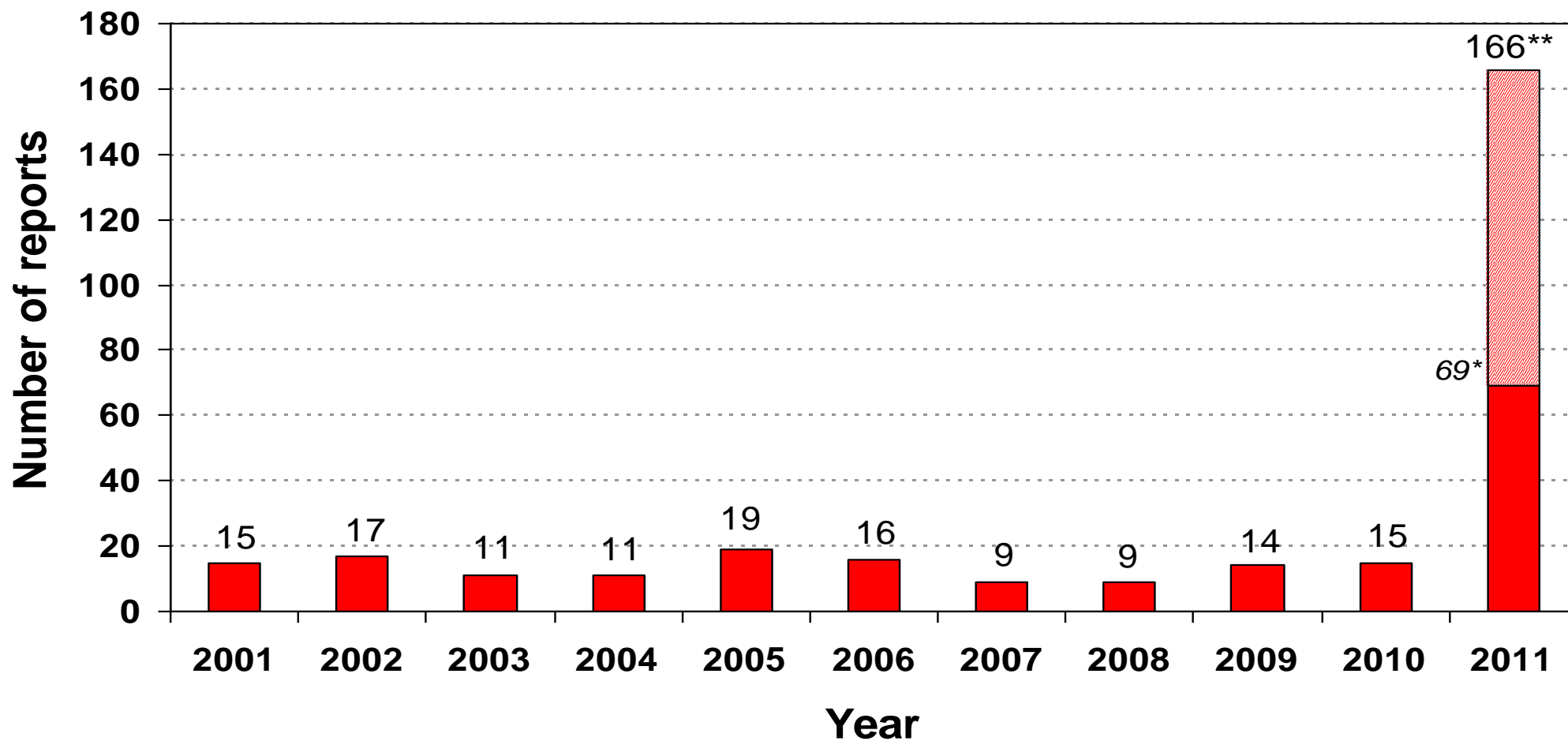
### **Conclusions**

- Greece experiences an outbreak of HIV/AIDS among IVDUs. Currently, this epidemic explains only 50% of the concomitant total HIV/AIDS reported cases increase.
- Up to 2009, “true” IVDU transmission of HIV-1 was uncommon among the reported IVDUs cases suggesting that sexual transmission prevailed up to 2009.
- During 2011, “true” IVDU transmission was dominant as suggested by the clustering of HIV sequences.
- Despite that the majority of IVDU cases occurred among people of Greek origin, HIV strains originated in Asia, former Soviet Union and Africa currently dominate.
- Urgent public health action is needed to halt this epidemic.

**Table:** Clustered HIV-1 infections among IVDUs over time. In total 93 sequences were analyzed belonging to subtypes A, B and G. Among them isolation dates were available for 88 isolates.

<b>Subtypes</b>	Subtype B	Subtype A	Subtype G	Total sequences analyzed
<b>Time period</b>				
Until 2009	3	0	0	58
2010	1	3	0	10
2011	3	13	2	20
Total	7	16	2	88

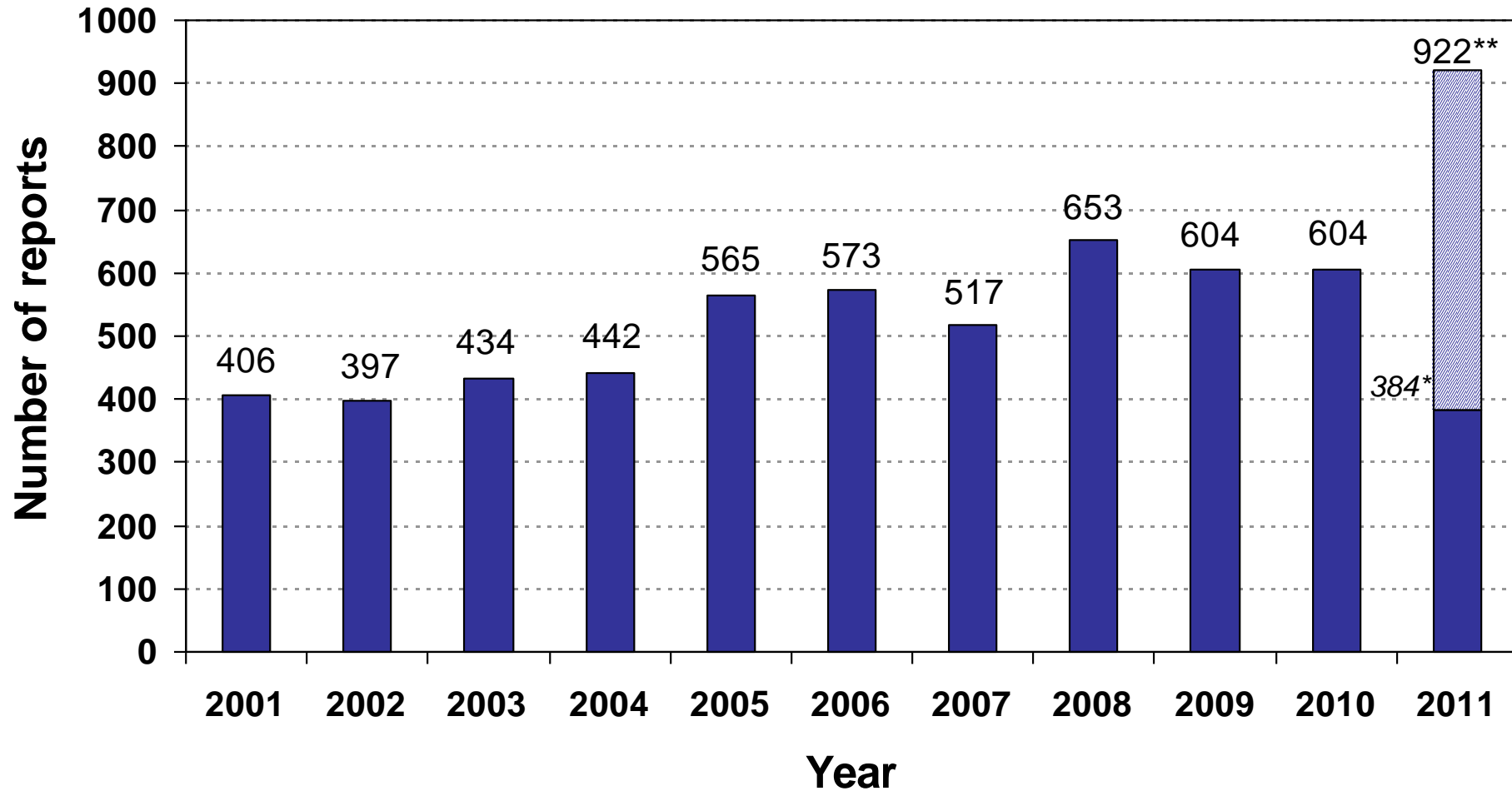
# Figure 1: Number of reported HIV diagnoses in IDUs by year in Greece



\* Number of diagnoses reported by May 31st, 2011

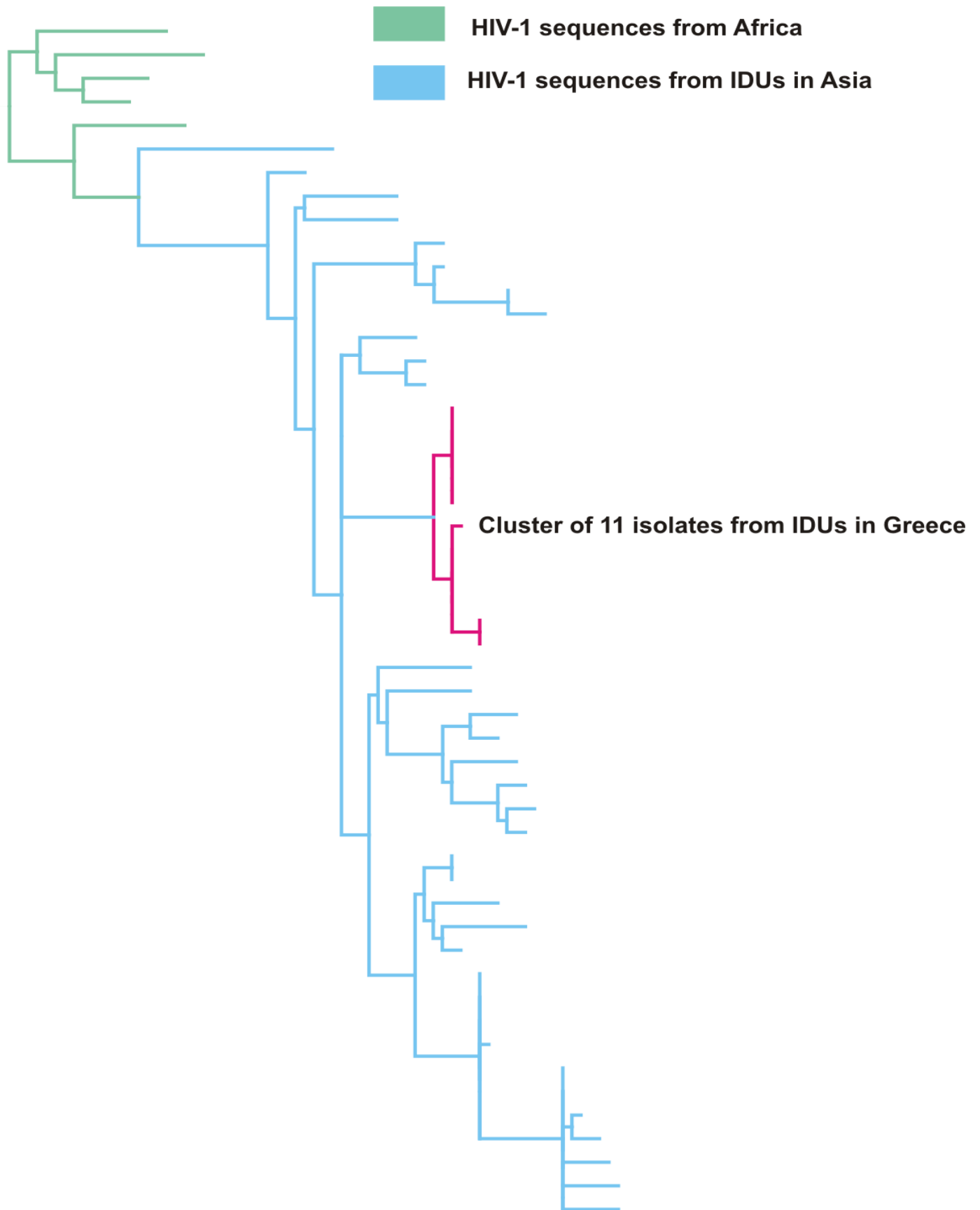
\*\* Projections for 2011 based on the number of diagnoses reported by May 31st, 2011

# Figure 2: Number of reported HIV diagnoses by year in Greece



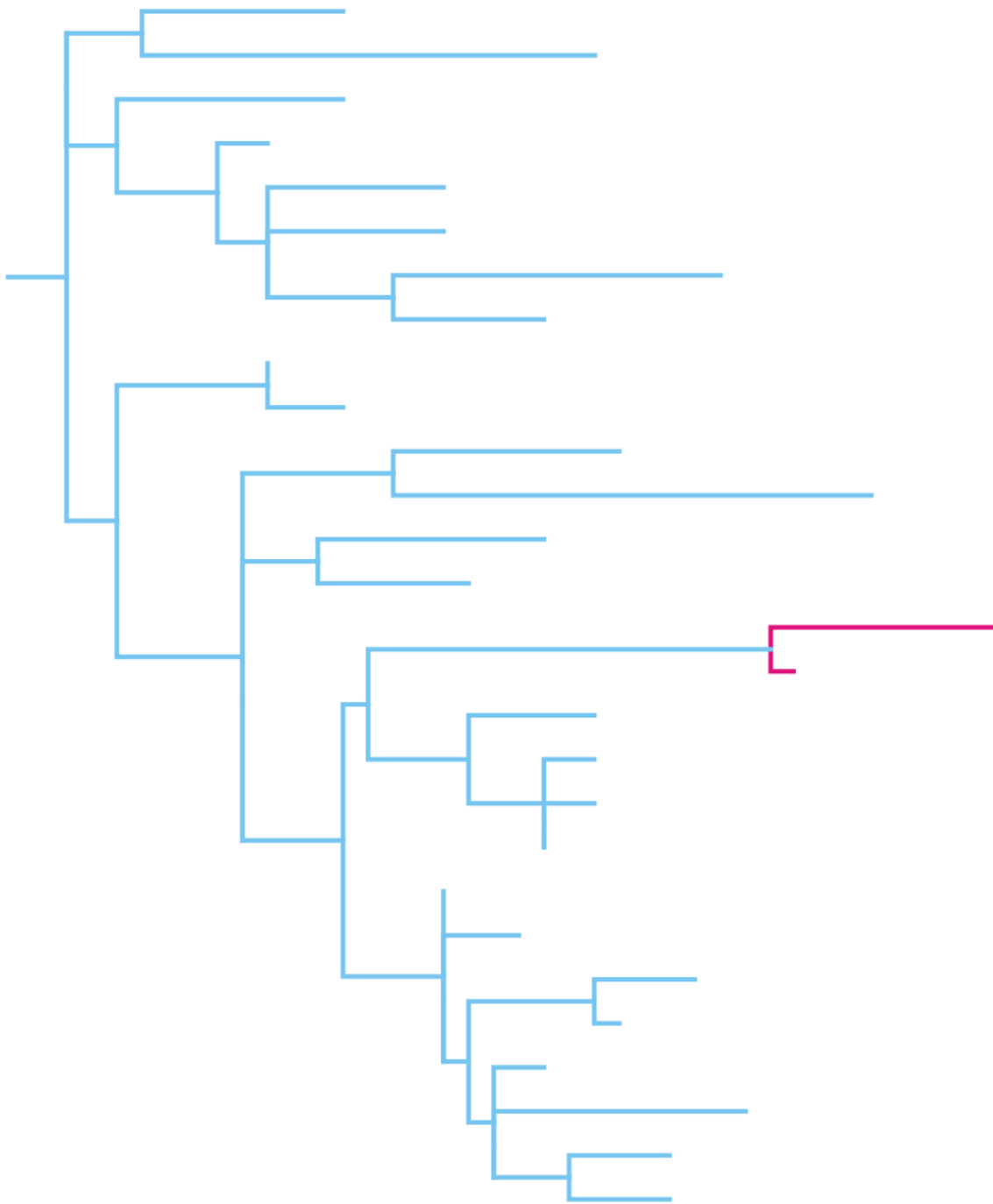
\* Number of diagnoses reported by May 31st, 2011

\*\* Projections for 2011 based on the number of diagnoses reported by May 31st, 2011



**Figure 3** Part of phylogenetic tree showing HIV-1 sequences from IDUs in Greece originated from Asia (subtype A). Based on the very low genetic heterogeneity of the Greek samples there is evidence that they have been sampled from recently infected patients

- HIV-1 sequences from IDUs in Greece
- HIV-1 sequences from Greece



**Figure 4** Part of phylogenetic tree showing HIV-1 sequences from IVDUs in Greece originated from a large local transmission network (subtype A).