Subject 7 Rapid Progressor Classification Does Not Change Data Interpretation

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Outline

- Subject 7 Categorized as Moderate and Not Rapid Progressor
- Research Question
- Subject 7 Moved to Rapid Progressor Group
- Diversity and Divergence Between Progressor Group Changes
- Subject 7 Does Not Significantly Impact Diversity or Divergence
- Subject 7 Differs from Moderate Progressor Trees and Resembles Rapid Progressors
- Expanding Research on Markham et al. Data
- Summary
Subject 7 Categorized as Moderate and Not Rapid Progressor

- Markham et al. 1998 progressor categorization based on CD4 T cell count within 2 years of seroconversion
  - Subject 7 CD4 T cell decline of 392/year
  - Never fell below 200 CD4 T cells

(Markham, 1998)
Diversity and divergence increased for all progressor groups

Divergence- significance between:
- Rapid and nonprogressor

Diversity- significance between:
- Rapid and nonprogressor
- Moderate and nonprogressor

Subject 7 Categorized as Moderate and Not Rapid Progressor

(Markham, 1998)
How does the grouping of Subject 7 as a rapid progressor as compared to their original grouping as a moderate progressor change slope of diversity/divergence as well as compare to rapid progressor phylogenetic trees?
**Subject 7 Moved to Rapid Progressor Group**

**Weighted Mean**
- Multiplied each subject's given slope by their number of observations
- Added up all subject's weighted slope
- Divided it by total number of observations of all subjects

**Graph**
- Standard error calculated in Excel
- Graphs of standard error and weighted mean generated for both slope of diversity and divergence

**Phylogenetic Tree**
- Phylogenetic trees generated for subjects 15, 4, 10, 11, 3, 1, and 6 through Phylogeney.fr
Subject 7 Categorized as Moderate and Not Rapid Progressor

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Diversity and Divergence Between Progressor Group Changes

Subject 7 Does Not Significantly Impact Diversity or Divergence

Subject 7 Differs from Moderate Progressor Trees and Resembles Rapid Progressors

Expanding Research on Markham et al. Data

Summary
Diversity Between Progressor Groups

Changes

- Rapid progressor mean slope: 2.4
- Moderate progressor mean slope: 1.47
- Nonprogressor: remains the same
Diversity Between Progressor Groups Changes

Slope of Diversity in Different Progressor Groups
Divergence Between Progressor Groups Changes

- Rapid progressor mean slope: 1.05
- Moderate progressor mean slope: 0.87
- Nonprogressor: remains the same
Divergence Between Progressor Groups

Changes
Inclusion of Subject 7 into rapid progressor group decreased the slope of diversity

Inclusion of Subject 7 into rapid progressor group decreased the slope of divergence

Comparison of slopes between each progressor group are nonsignificant (p > 0.05)

Indicate that the classification of subject 7 was not impactful to overall data interpretation
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Subject 7 Closely Resembles Subject 15

(Markham, 1998)
Subjects 3 and 4 Present Similar Trees

Subject 4

Subject 3

S4V3-17
S4V3-14
S4V3-13
S4V3-18
S4V3-9
S4V3-10
S4V3-8
S4V2-2
S4V3-11
S4V2-9
S4V3-12
S4V5-10
S4V4-10
S4V4-9
S4V4-8
S4V4-6
S4V3-15
S4V3-3
S4V3-4
S4V3-5
S4V4-4
S4V3-16
S4V3-12
S4V3-11
S4V3-3
S4V3-8
S4V2-10
S4V2-6
S4V2-12
S4V2-8
S4V1-2
S4V1-5
S4V1-1
S4V1-3
S4V1-14
S4V1-7

SIV4-6
SIV4-5
SIV4-7
SIV3-5
SIV4-9
SIV4-3
SIV3-8
SIV6-1
SIV6-6
SIV6-4
SIV6-5
SIV5-3
SIV5-6
SIV5-4
SIV5-2
SIV5-8
SIV5-7
SIV5-10
SIV3-1
SIV3-2
SIV3-10
SIV3-3
SIV3-12
SIV3-11
SIV3-9
SIV3-1
SIV1-4
Subject 7 Differs from Moderate Progressor
Phylogenetic Trees

Subject 5  Subject 7  Subject 8  Subject 14  Subject 9

(Markham, 1998)
Subject 7 Tree Closely Resembles Rapid Progressor Trees

- Indicates that evolution of clones of subject 7 is more similar to rapid progressors
- No evidence that Subject 7 was miscategorized
  - Did not significantly impact slopes for moderate and rapid progressors
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Expanding Research on Markham et. al Data

- Study differences in between first and last visits since each subject had a different number of observations
- Fully examine non progressor trees as well to see if patterns of evolution present differently
- Change the criteria for different progressor groups
Summary

- Diversity and divergence between progressor group changes
- Subject 7 did not significantly impact diversity or divergence
- Rapid progressor trees showed similarity
- Subject 7 differed from moderate progressor trees and resembled rapid progressors
- Subject 7 progressor classification did not change data interpretation
- Potential for progressor categorization to yield more similarities between phylogenetic trees
Thank you to the LMU Biology Department, Dr. Dahlquist, and BIOL 368-01 class!
Subject 1 does not resemble other trees
Subjects 10 and 11 Present Similar Trees