## LIST OF FIGURES

|           | Page  |
|-----------|---|
| Figure 1  | Evolutionary Relationships of HIV and SIV Lineages 8  |
| Figure 2  | Global and Regional Distributions of HIV-1 Subtypes, CRFs, and URFs between 2010-2015   |
| Figure 3  | Overview of the HIV-1 Genome and Structure  |
| Figure 4  | Overview of the HIV-1 Life Cycle  |
| Figure 5  | Schematic Representation of HIV-1, SIV, and SHIV23  |
| Figure 6  | Structure of Human IgA1 and IgA227  |
| Figure 7  | Formation of SIgA   |
| Figure 8  | Protective Mechanisms of IgA against HIV at Mucosal Surfaces 33   |
| Figure 9  | Construction of SHIV-E151   |
| Figure 10 | Early Passage History of SHIV-E1 in RMs54   |
| Figure 11 | Replication Kinetics of SHIV-E1 in RMs during Serial Passage 55   |
| Figure 12 | Coreceptor Usage of SHIV-E1p2d57 Reisolated from Animal R551 58   |
| Figure 13 | Generation of the SHIV-E1p2 IMC   |
| Figure 14 | Serial Passages of P4 and P5 Followed by Isolation of SHIV-E1p5 62  |
| Figure 15 | SHIV-E1p5 is Exclusively R5 Tropic  |
| Figure 16 | SHIV-E1p5 Replication In Vitro and In Vivo  |
| Figure 17 | Predicted Env Amino Acid (AA) Changes during the Adaptation of SHIV-E1p1d203, SHIV-E1p2d14, the "Dead End" Isolate SHIV-E1p2d57, and SHIV-E1p5 by Deep Sequencing |
| Figure 18 | Predicted Amino Acid Changes in the V3 Loop of Clade E HIV gp120 Associated with Coreceptor Switching   |