### Supplementary Table 1: Sweep frequencies.

Frequencies of derived (swept SNP), heterozygote and wild type SNPs and each locus, for each year for both *An. gambiae* and *An. coluzzii*.

#### An. gambiae

| Year | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt |
|------|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|
| 2013 | 0.07 | 0.13 | 0.80 | 0.02 | 0.44 | 0.54 | 0.03 | 0.66 | 0.31 | 0.05 | 0.55 | 0.39 | 0.03 | 0.64 | 0.33 | 0.05 | 0.63 | 0.32 | 0.06 | 0.63 | 0.31 |
| 2015 | 0.12 | 0.40 | 0.48 | 0.08 | 0.43 | 0.50 | 0.18 | 0.51 | 0.31 | 0.12 | 0.51 | 0.35 | 0.13 | 0.38 | 0.50 | 0.10 | 0.53 | 0.38 | 0.02 | 0.36 | 0.62 |
| 2018 | 0.10 | 0.05 | 0.85 | 0.10 | 0.43 | 0.47 | 0.50 | 0.10 | 0.50 | 0.33 | 0.02 | 0.36 | 0.62 | 0.10 | 0.53 | 0.38 | 0.02 | 0.36 | 0.62 | 0.02 | 0.36 | 0.62 |

#### An. coluzzii

| Year | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt | der | hets | wt |
|------|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|
| 2011 | 0.04 | 0.30 | 0.66 | 0.04 | 0.44 | 0.52 | 0.04 | 0.44 | 0.52 | 0.04 | 0.44 | 0.52 | 0.04 | 0.44 | 0.52 | 0.04 | 0.44 | 0.52 | 0.04 | 0.44 | 0.52 |
| 2012 | 0.23 | 0.35 | 0.42 | 0.09 | 0.35 | 0.56 | 0.06 | 0.43 | 0.51 | 0.06 | 0.43 | 0.51 | 0.06 | 0.43 | 0.51 | 0.06 | 0.43 | 0.51 | 0.06 | 0.43 | 0.51 |
| 2014 | 0.07 | 0.37 | 0.56 | 0.09 | 0.37 | 0.54 | 0.13 | 0.55 | 0.32 | 0.04 | 0.36 | 0.60 | 0.15 | 0.44 | 0.42 | 0.10 | 0.43 | 0.47 | 0.10 | 0.43 | 0.47 |
| 2016 | 0.12 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 |
| 2018 | 0.24 | 0.34 | 0.42 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 | 0.13 | 0.37 | 0.50 |

Supplemental notes:
- **der** = derived
- **hets** = heterozygote
- **wt** = wild type
Supplementary Table 2: Graphical Data with corresponding statistics. For each significant result, the p value and mean data are shown for each graphical figure in the paper. Each figure is separated by a bold underline, with the figure the statistics refer to specified above the said line.

Tiassale vs N’Gousso

| Transcript | ΔΔct | µ | p-value |
|------------|------|---|---------|
| SAP2       | 12.43| 2.65E-04 |
| CSP6       | 3.79 | 3.16E-02 |

Tiassale vs Kisumu

| Transcript | ΔΔct | µ | p-value |
|------------|------|---|---------|
| SAP2       | 6.48 | 1.19E-03 |
| CSP1       | 2.56 | 3.64E-02 |
| CSP5       | 4.24 | 1.83E-03 |
| CSP6       | 5580.03 | 1.73E-03 |

Statistics and mean ddCT values used in Extended Data Figure 2

| Tiassale post-exposure |
|------------------------|
| ΔΔct | µ | p-value |
|-------|---|---------|
| SAP2  | 0.298 | 0.0251 |
| SAP3  | 5.83 | 0.00213 |
| CSP1  | 12.75 | 0.0416 |

N’Gousso

| Transcript | ΔΔct | µ | p-value |
|------------|------|---|---------|
| SAP2       | 6.84 | 0.00213 |
| CSP1       | 1.92 | 0.0467 |
| CSP6       | 35.49 | 0.0001 |

Statistics and mean ddCT values used in Figure 1a

| Mortality | 30 minutes | 1 hour | 2 hours | 4 hours | 24 hours | 48 hours |
|-----------|-------------|--------|---------|---------|----------|---------|
| Deltamethrin |
| Change | 11.7% to 79% |
| p-value | 2.03E-05 |
| Permethrin |
| Change | 5.2% to 24.7% |
| p-value | 1.51E-03 |
| Alpha-cypermethrin |
| Change | 2.8% to 10.8% |
| p-value | 7.72E-02 |
| Banfora Deltamethrin |
| Change | 13.19% to 48.4% |
| p-value | 2.19E-02 |
| CSP6 |
| Change | 11.60% to 31.6% |
| p-value | 4.74E-02 |

Statistics and mean mortality rates used in Figure 2a; Extended Data 3a.

SAP2

| Mortality | Change | p-value |
|-----------|--------|---------|
| Deltamethrin |
| 47.7% to 76.7% | 2.03E-05 |
| Permethrin |
| 38.2% to 31.6% | 1.51E-03 |
| Alpha-cypermethrin |
| 28.8% to 10.8% | 7.72E-02 |
| Banfora Deltamethrin |
| 48.4% to 31.6% | 2.19E-02 |

CSP6

| Mortality | Change | p-value |
|-----------|--------|---------|
| Deltamethrin |
| 47.7% to 76.7% | 2.03E-05 |
| Permethrin |
| 38.2% to 31.6% | 1.51E-03 |
| Alpha-cypermethrin |
| 28.8% to 10.8% | 7.72E-02 |
| Banfora Deltamethrin |
| 48.4% to 31.6% | 2.19E-02 |

Transgenics

| Mortality | Change | p-value |
|-----------|--------|---------|
| Deltamethrin |
| 47.7% to 76.7% | 2.03E-05 |
| Permethrin |
| 38.2% to 31.6% | 1.51E-03 |
| Alpha-cypermethrin |
| 28.8% to 10.8% | 7.72E-02 |
| Banfora Deltamethrin |
| 48.4% to 31.6% | 2.19E-02 |

Statistics and mean mortality rates used in Figure 2b; Extended Data Figure 5 and Figure 2b.
Supplementary Table 3: Primer List. Primers used for both synthesis of dsRNA constructs and qPCR.

| RNAi Primers | Forward                  | Reverse                                      |
|--------------|--------------------------|----------------------------------------------|
| dsSAP2       | taatacgactcataaggTTCTCGTTCCGGGTGCTTCA | taatacgactcataaggTAGTAGACCCCATTCCCCACTT      |
| dsSAP3       | taatacgactcataaggATGAAATCTCTCGTGGTGCG  | taatacgactcataaggTTCTCGGGGTGTACCTCTTCTC      |
| dsCSP4       | taatacgactcataaggGTAGCCCTCTGACGAGTTT  | taatacgactcataaggTTCTCCAGCACGCACATGAT        |
| dsCSP6       | taatacgactcataaggGCAAGCCAGCAGCAGCTTCTT | taatacgactcataaggTTCCCCCTTTTCAGGCACAGCAT     |
| dsGFP        | taatacgactcataaggAGAACGTAACGCGCAACAGTTC | taatacgactcataaggAGACTTGTACAGCTCGTCCATGCC    |

| qPCR Primers | Forward                  | Reverse                                      |
|--------------|--------------------------|----------------------------------------------|
| SAP1         | ACGTCAACACAGAACGATCAAC   | TTGCTGGGTACTTATCTCCTGGG                      |
| SAP2         | GCAAGCTGGAGACGGTCTTCT    | GAAACGAGTGGCGACGAA              |
| SAP3         | AGTTAGCCAGAAGCAGAAGAG   | GCGGTACTTGGTGAGCTAGATG             |
| CSP1         | AGCCTTTCTGGTCTGCTTCTCA  | CGGTACGGTCTCTGAGTCTACCT           |
| CSP3         | AACCTAGTCAACACAGTACGAT   | ATCGGGAAAGGAGGTGCTCTTCAAGC         |
| CSP4         | GCTATCAGGGCAGATTTATGG    | AGGGGCGTTAAATATCTGCGTGTG           |
| CSP5         | GCAGGGACACTTACAGTACAA   | TGGGCAAGATACGTTTGCAGAT            |
| CSP6         | GACAGTTTGTCTGCTGCG      | CTTGGCAAGTGGTCTGTGTC             |
| S7           | AGAACAGAACAGACACACAC   | GCTGCAGACTCAGGCCGTATTC          |
| EF           | GGCAAGAGGGCATACACAGATCGG | GTCCATCTGGCAGCCTCCGG              |