Fig S1. Heatmap displaying the natural log ratio of class switch abundance over the expected abundance based on class alignment distributions for the DeepARG-LS–30% runs. Non-existent switches and same-class pairs are marked in black. Over-abundance is represented in **blue**, while under-abundance is represented in **red**.
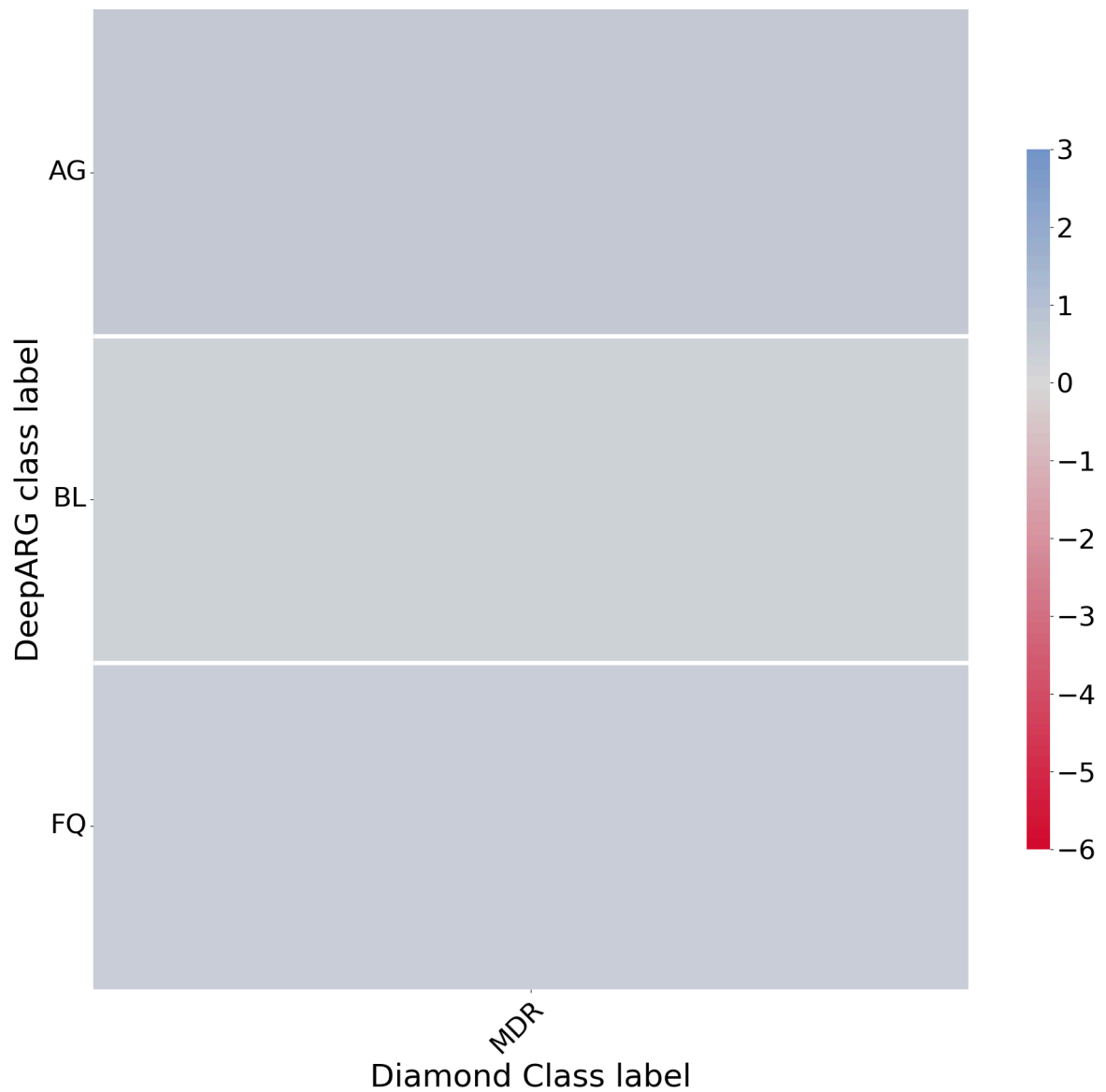
Fig S2. Heatmap displaying the natural log ratio of class switch abundance over the expected abundance based on class alignment distributions for the DeepARG-LS–50% runs. Over-abundance is represented in **blue**, while under-abundance is represented in **red**.
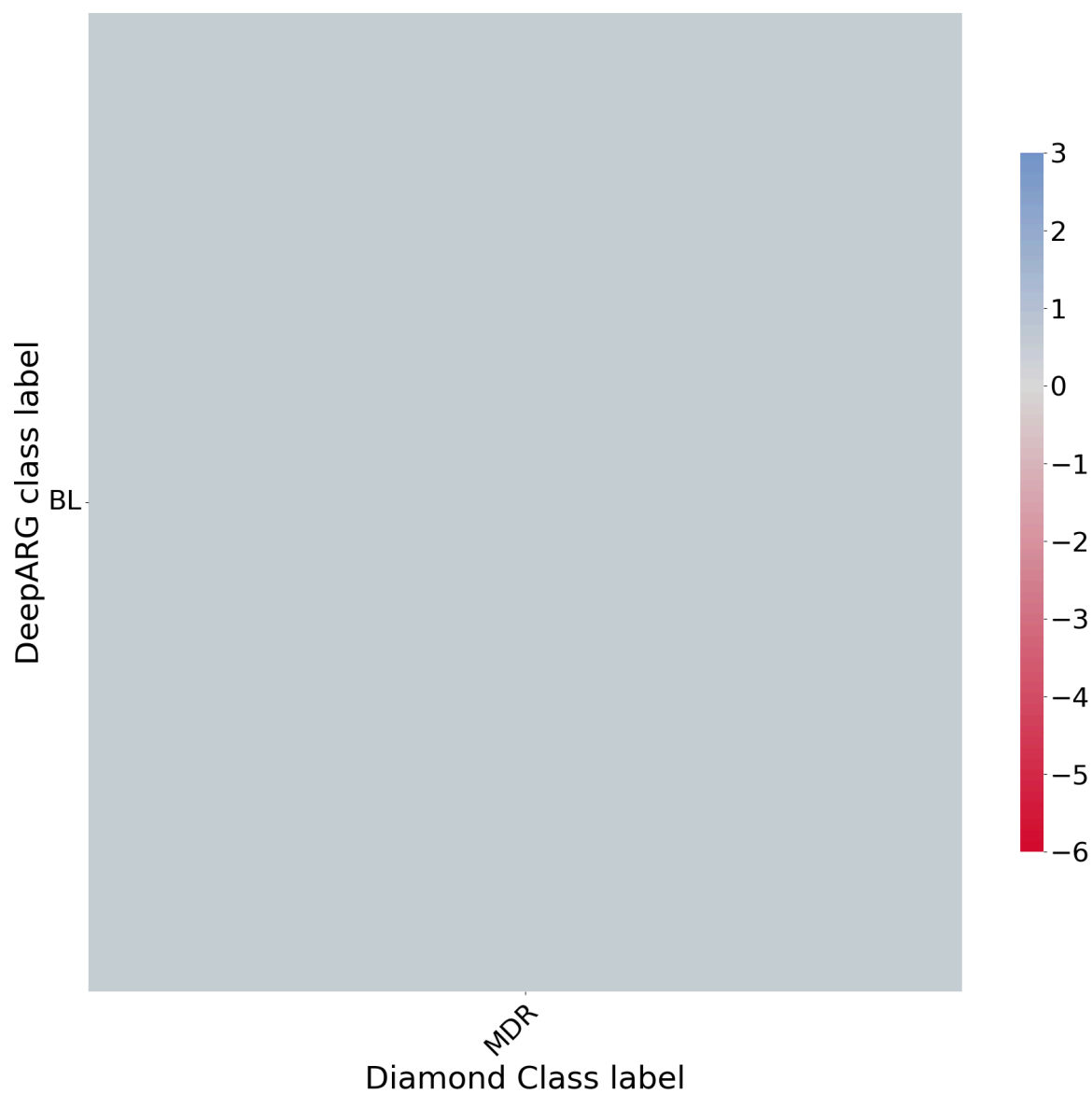
Fig S3. Heatmap displaying the natural log ratio of class switch abundance over the expected abundance based on class alignment distributions for the DeepARG-LS–80% runs. Over-abundance is represented in **blue**, while under-abundance is represented in **red**.
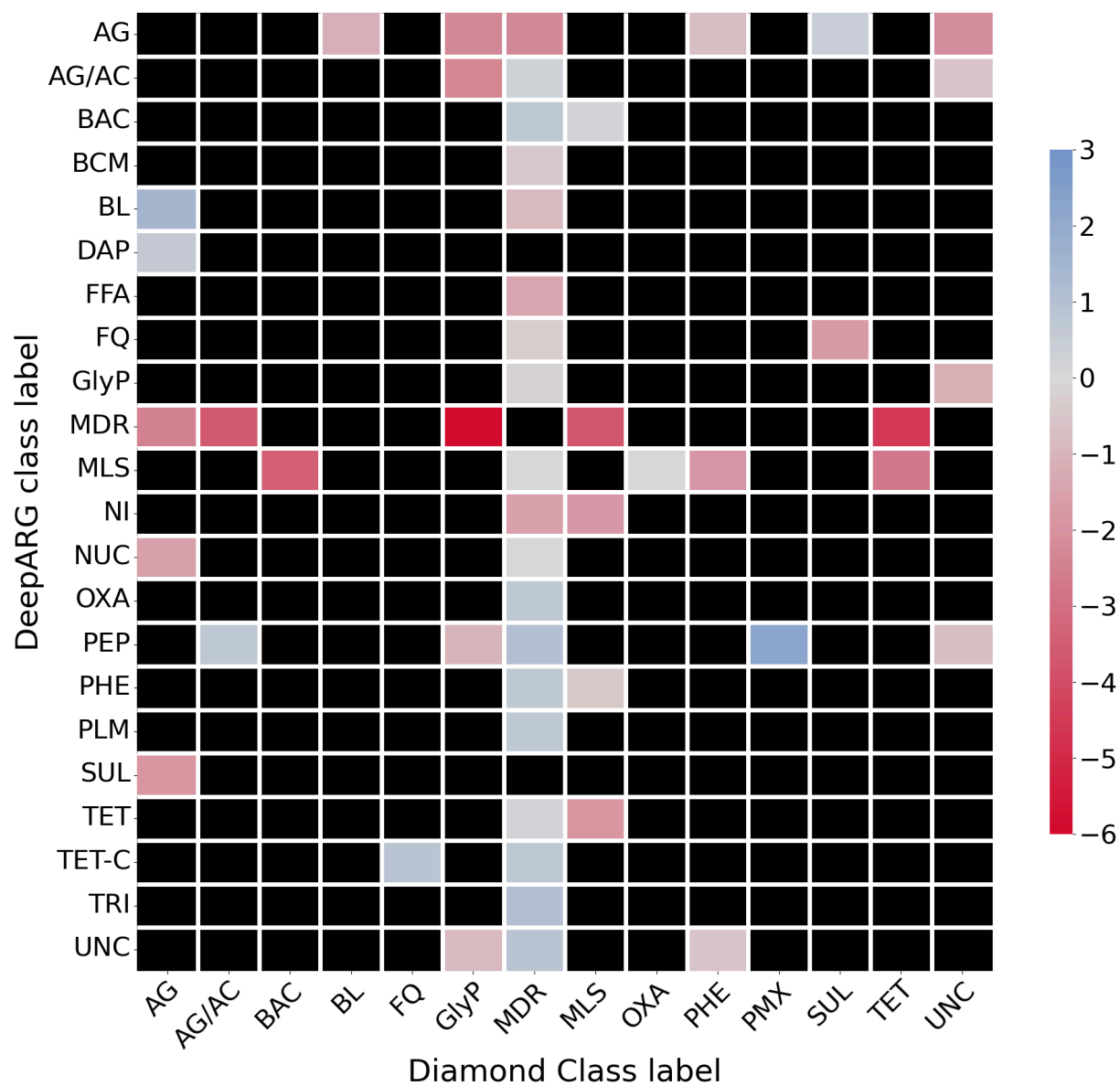
Fig S4. Heatmap displaying the natural log ratio of class switch abundance over the expected abundance based on class alignment distributions for the DeepARG-SS–30% runs. Non-existent switches and same-class pairs are marked in black. Over-abundance is represented in **blue**, while under-abundance is represented in **red**.
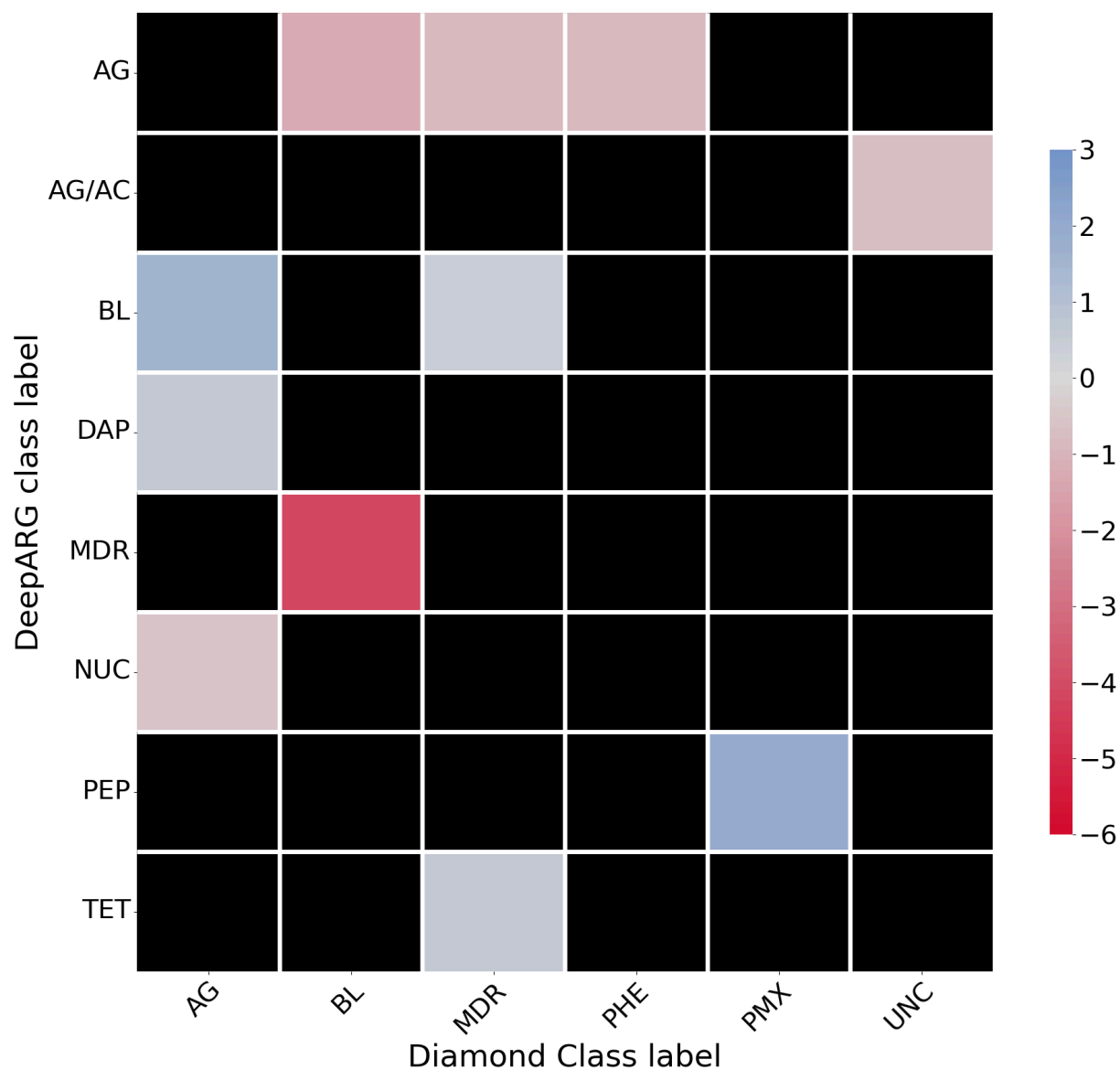
Fig S5. Heatmap displaying the natural log ratio of class switch abundance over the expected abundance based on class alignment distributions for the DeepARG-SS–80% runs. Non-existent switches and same-class pairs are marked in black. Over-abundance is represented in **blue**, while under-abundance is represented in **red**.
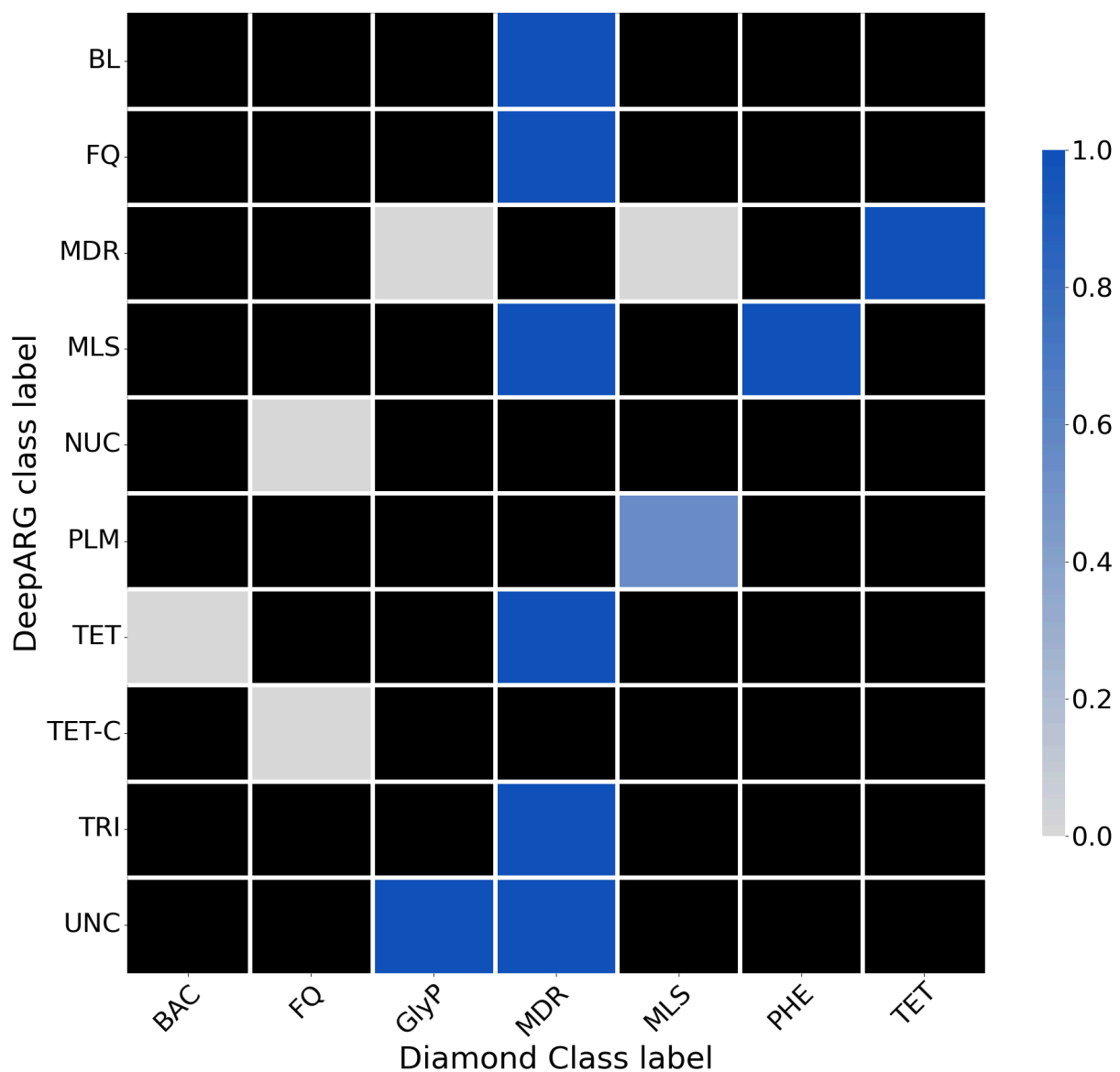
Fig S6. Heatmap displaying the relative frequency of queries for each class switch containing alignments to the Diamond and DeepARG classes in the same cluster or domain superfamily for the DeepARG-LS–30% runs
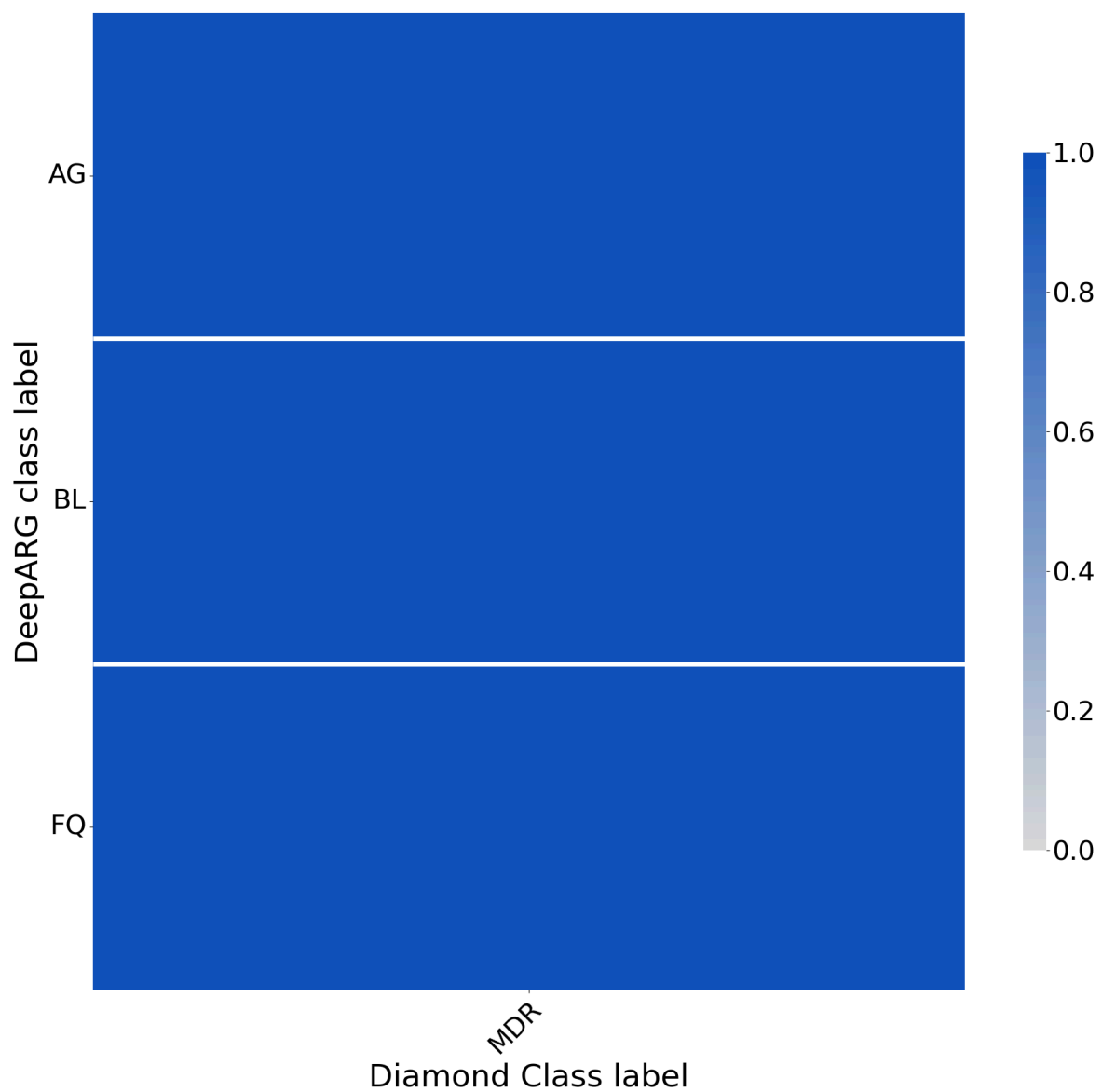
Fig S7. Heatmap displaying the relative frequency of queries for each class switch containing alignments to the Diamond and DeepARG classes in the same cluster or domain superfamily for the DeepARG-LS–50% runs
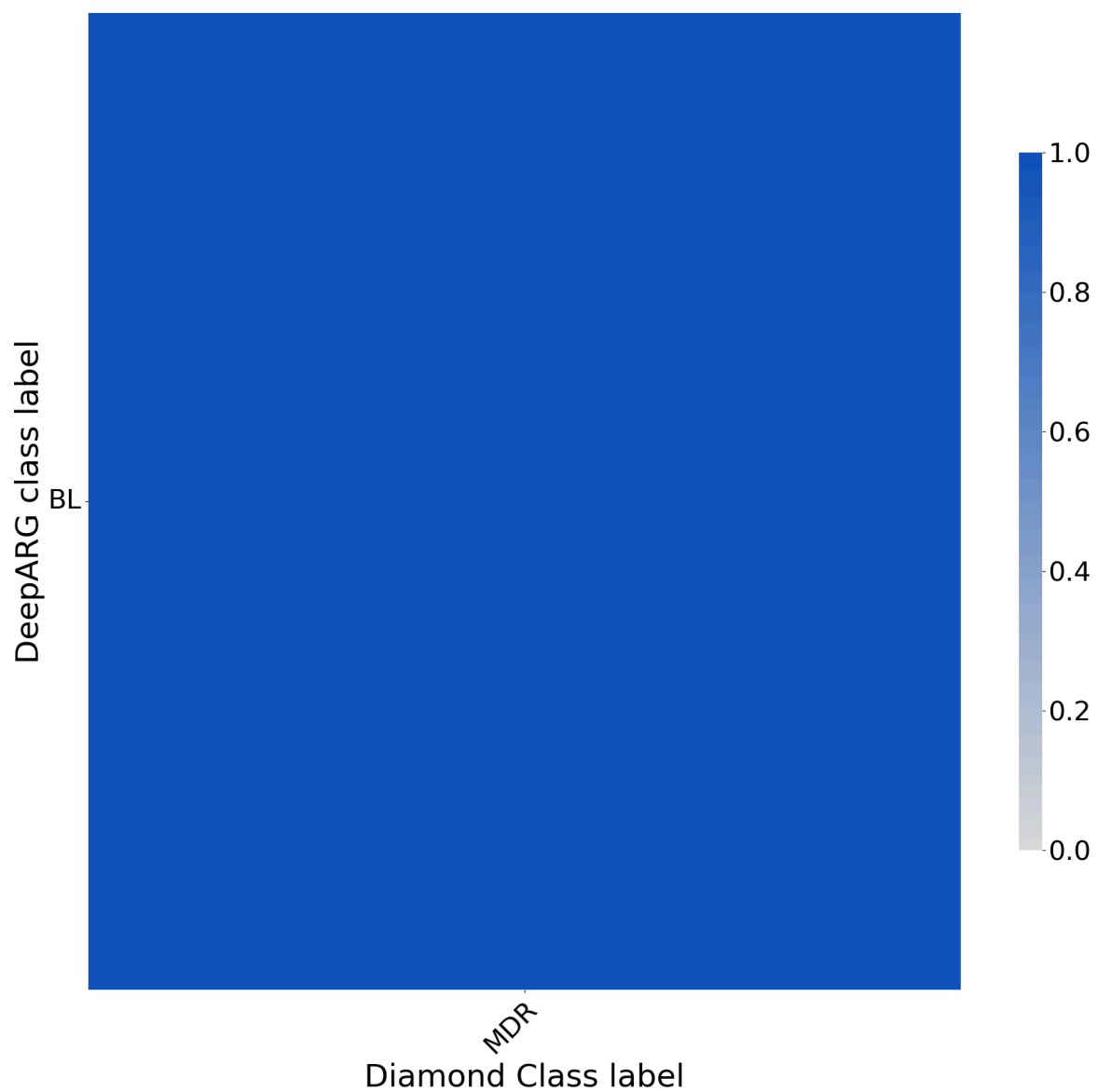
Fig S8. Heatmap displaying the relative frequency of queries for each class switch containing alignments to the Diamond and DeepARG classes in the same cluster or domain superfamily for the DeepARG-LS–80% runs
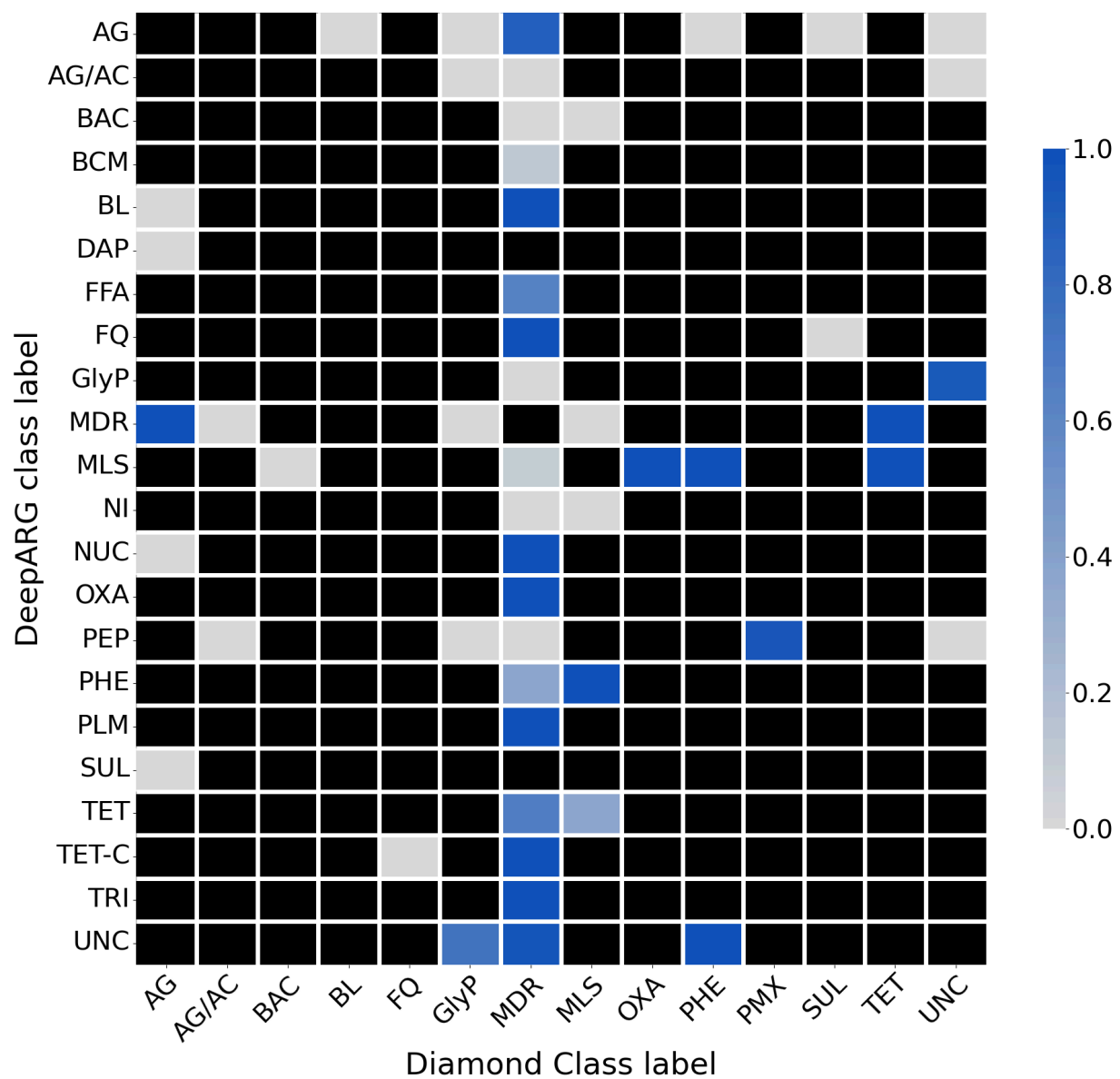
Fig S9. Heatmap displaying the relative frequency of queries for each class switch containing alignments to the Diamond and DeepARG classes in the same cluster or domain superfamily for the DeepARG-SS–30% runs
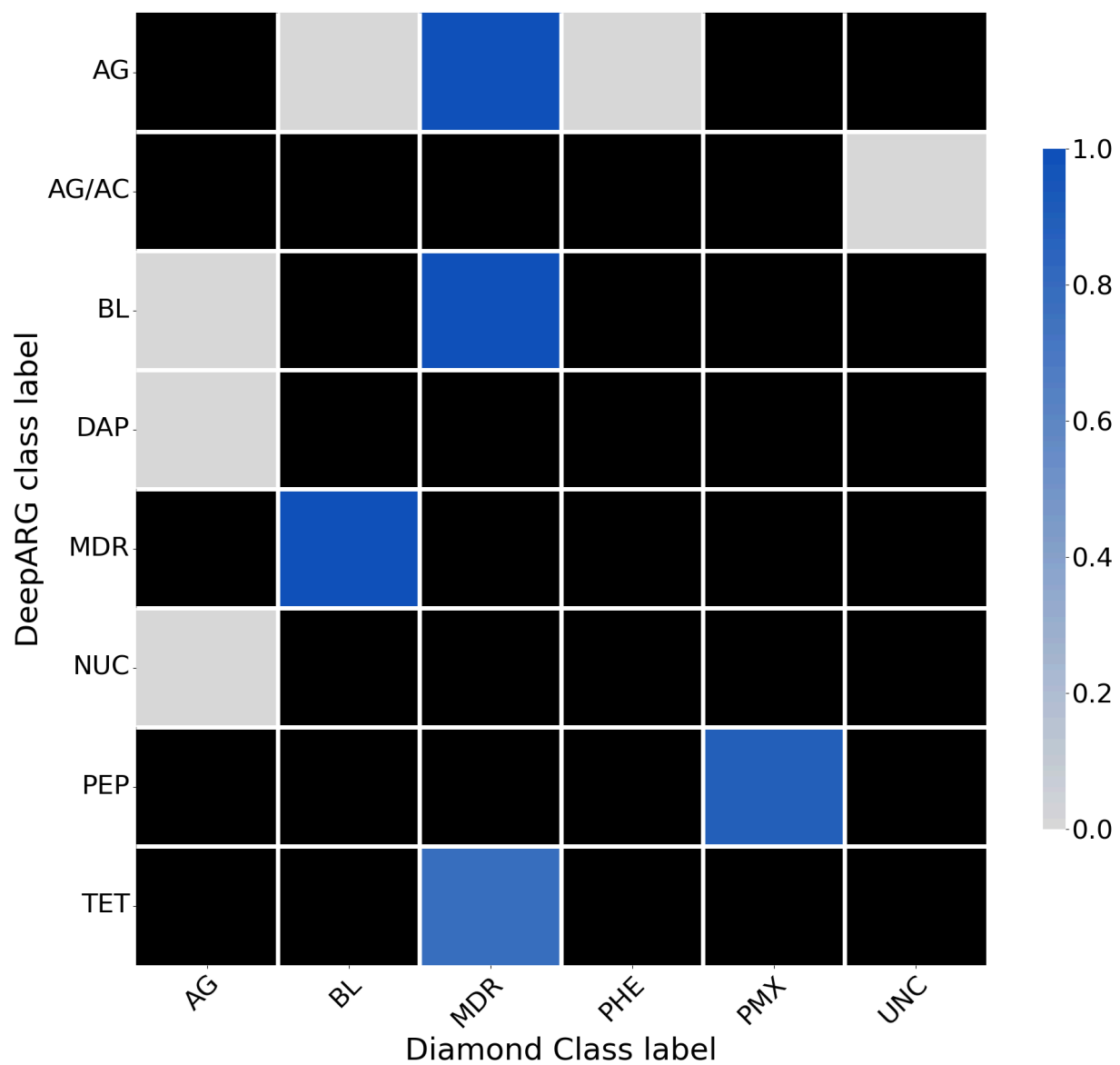
Fig S10. Heatmap displaying the relative frequency of queries for each class switch containing alignments to the Diamond and DeepARG classes in the same cluster or domain superfamily for the DeepARG-LS–80% runs