**Plan of Activities (12 Months)**

Months 1–2: Sample Selection and DNA Preparation
- Select representative Colletotrichum isolates from key species complexes.
- Confirm species identity by morphology and multilocus sequencing.
- Cultivate isolates and extract high-quality genomic DNA.

Months 3–5: Whole-Genome Sequencing and Assembly
- Perform Illumina (short reads) and Oxford Nanopore/PacBio (long reads) sequencing.
- Generate hybrid genome assemblies using SPAdes or Flye.
- Assess assembly quality with BUSCO and QUAST.

Months 6–7: Genome Annotation
- Annotate genes and repetitive elements using Funannotate, AUGUSTUS, and InterProScan.
- Identify transposable elements with RepeatMasker and EDTA.
- Deposit annotated genomes into public databases.

Months 8–9: Comparative and Functional Genomics
- Perform orthology and pan-genome analyses with OrthoFinder.
- Analyze synteny, gene family expansions, and horizontal gene transfers.
- Identify pathogenicity-related genes using PHI-base, CAZy, and antiSMASH.

Months 10–11: Data Integration and Evolutionary Analysis
- Integrate genomic, phylogenetic, and phenotypic data.
- Build phylogenomic trees to infer evolutionary relationships.
- Explore genomic signatures of host specialization.

Month 12: Reporting and Dissemination
- Summarize results in a scientific manuscript and conference presentation.
- Share data in public repositories and finalize project documentation