Lab Naming and Versioning Guide

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Purpose

This document defines the **naming conventions** and **identifier system** used across the Corvino Lab protocol library. These rules ensure:

- Consistency across all `.qmd` protocol and buffer files
- Stable, human-readable identifiers
- Clear separation of *identity* (`protocol_id`) from *versioning* (`version:`)
- Scalable indexing as the repository grows

This naming guide governs all **protocol**, **buffer**, and **supporting document** files.

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Identifier Principles

Each file includes a **stable identifier** (`protocol_id`) that never changes once assigned. Document **versions**, however, reflect revisions and updates over time.

Identifiers are:

- Human-readable
- Hierarchical
- Independent of filenames
- Independent of version numbers

Identifier Structure

All identifiers follow this structure:

`<DOMAIN>-<TOPIC>-<TYPE>-<ID>`

Where:

DOMAIN

Defines biological context or system
Examples: - `MUS` → mouse
- `HUM` → human
- `CELL` → cell-line–based procedure
- `GEN` → general or cross-species workflows

TOPIC

Defines the primary experimental or biological theme
Examples: - `LCMV` → LCMV virology workflows
- `PTPRC` → genotyping or CD45 locus assays
- `FLOW` → flow cytometry
- `RNA` → RNA extraction or analysis

TYPE

A concise descriptor of the method class
Examples: - `PROD` → virus production
- `PLA` → plaque assay
- `FFA` → focus-forming assay
- `QPCR` → quantitative PCR
- `GENO` → genotyping
- `PROP` → propagation medium or cell maintenance
- `MED` → assay or experimental medium

ID

A three-digit number (`001`, `002`, …) indicating discrete methods inside the same category.

Important:
The ID increments only when a **new, distinct protocol or buffer** is added—not when updating or revising an existing file.

Versioning

Versions are tracked exclusively in the YAML header:

```yaml
version: "v1.0"
```

- Version increases reflect evolutionary changes to the *same* protocol or buffer.
- `protocol_id` remains **unchanged** across all updates.

Examples: - `v1.0` → initial release
- `v1.1` → minor modifications
- `v2.0` → major revision

Never encode the version inside the `protocol_id`.

When to Assign a New ID (001 → 002)

A new ID is assigned when:

- The protocol constitutes a **novel method**, *not* just a revision
- The workflow differs in a functionally meaningful way

- A buffer has a **distinct formulation** or **different intended use**
- An assay variant is introduced (e.g., fluorescent plaque assay, alternate overlay formulation, new primer system)

Examples:

Virus Production

- `MUS-LCMV-PROD-001` → standard T75 BHK or L929 production
- `MUS-LCMV-PROD-002` → roller-bottle high-volume culture system

Assays

- `MUS-LCMV-PLA-001` → crystal violet plaque assay
- `MUS-LCMV-PLA-002` → fluorescent immunoplaque assay

Genotyping

- `MUS-PTPRC-GENO-001` → Ptprc SNP genotyping
- `MUS-PTPRC-GENO-002` → multiplexed three-primer allelic discrimination assay

Buffers

- `BUF-BHK-PROP` → BHK propagation medium

Buffer IDs are `BUF-{DESCRIPTOR}` — no numeric suffix. One buffer_id maps to exactly one recipe/file; a serum-free variant would be a separate buffer_id (e.g. `BUF-BHK-PROP-SF`), not a numbered suffix on the same ID.

Filenames

Filenames describe the file content and follow this structure:

Protocols

`prot_<domain>_<topic>_<method>.qmd`

Examples: - `prot_mus_lcmv_multi_strain_production.qmd` - `prot_mus_lcmv_plaque_assay_vero.qmd` - `prot_mus_lcmv_focus_forming_assay.qmd` - `prot_mus_genotyping_ptprc_jaxboy_single_tube.qmd`

Buffers

`buf_<target>_<function>.qmd`

Examples: - `buf_bhk_propagation_medium.qmd` - `buf_vero_propagation_medium.qmd` - `buf_lcmv_plaque_assay_m`

Required YAML Fields

Each `.qmd` file must include:

```
title:
author:
date:
version:
protocol_id:
```

Example:

```
protocol_id: "MUS-LCMV-PROD-001"
version: "v1.0"
```

Protocol ID Examples (Current Library)

LCMV Methods

- `MUS-LCMV-PROD-001` → LCMV multi-strain production protocol
- `MUS-LCMV-PLA-001` → Vero cell plaque assay
- `MUS-LCMV-FFA-001` → Focus-forming assay
- `MUS-LCMV-QPCR-001` → GP-based qPCR viral load assay

Genotyping

- `MUS-PTPRC-GENO-001` → Ptprc (CD45.1/2) allele SNP genotyping

Buffers

- `BUF-BHK-PROP` → BHK propagation medium
- `BUF-VERO-PROP` → Vero propagation medium
- `BUF-LCMV-PLA` → LCMV plaque assay medium

Rules for Future Expansion

1. Maintain readability: avoid unnecessary abbreviations.
2. Keep identifiers **short but descriptive**.
3. Ensure **no collisions** within each TOPIC–TYPE group.
4. Do not remove or reuse IDs, even if protocols become deprecated.
5. Always update the version number when content changes.

Version History

Version	Date	Description
v1.0	2025-08-01	Original naming guide.
v1.1	2025-12-02	Expanded to include LCMV protocol classes, buffer categories, and new genotyping schema.