

CONFLUENCE: An Evidence-Gated Dynamical Framework for Integrating Oncology Knowledge, Molecular Observations and Adaptive Cancer-State Modeling

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19 September 2026

Project Confluence technical report / GitHub cloudynirvana

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RESEARCH TECHNICAL REPORT. Project Confluence is a computational research framework. It is not a medical device, not a clinical decision-support system, not a diagnostic or therapeutic product, and not a protocol. This document makes no cure claim, no dosing recommendation, and no claim of patient benefit. Simulated trajectories are not patient outcomes. Current results are computational unless an external experiment is cited.

OnCo data (onco.cc) is cited under CC BY-NC 4.0; commercial use needs a licence. CONFLUENCE software is MIT. This PDF has no DOI.

Abstract

Cancer research now produces knowledge graphs, multi-omic assays and dynamical simulators in parallel. The failure mode is collapsing those layers. This study asks whether a provenance-controlled pipeline can keep the layers apart while still allowing testable predictions. Scientific success is a staged chain — traceability, mathematical validity, identifiability, out-of-sample prediction, experimental falsification — not disease eradication. PR #9 is architectural evidence for the gates, not therapeutic efficacy.

Working findings chapter: Knowledge Gates for Dynamical Oncology Models: Findings from an OnCo x CONFLUENCE Integration

Document type: Research findings chapter (working thesis format)

Status: Specification and architectural findings. Not a clinical result.

Date: 18 September 2026

Citation style: numbered Vancouver-style in-text citations [1] matching section 8.

Oncology now has a public, cited knowledge graph (OnCo) [1-3,6] and a separate computational research simulator (CONFLUENCE v2) [7]. The working hypothesis is that those artefacts are complementary provided they are not collapsed into each other.

The hard problem is converting facts into causal, testable, uncertainty-aware dynamical relationships without treating a web page or a legacy numeric map [9] as an identified parameter. This chapter records the P0 adapter [8] and refuses a universal cure as the success criterion [12,14].

Frozen lineages: tnbc_mod_3s [11], confluence_report_6s, confluence_v2_15d [7], confluence_v1_calibrator [9]. OnCo Ideas [4,5] are an external hypothesis shelf.

1. INTRODUCTION

OnCo answers what is named, linked, dated and cited [1,6]. CONFLUENCE v2 answers how a frozen 15-D state moves under control [7]. Mixing them treats LDHA as p_lactate or a mutation effect as identified Theta [9]. Data licence CC BY-NC 4.0; software MIT [2,3].

2. SPECIFIC AIMS

1. Forbid skip-level promotion from OnCo knowledge to parameters.
2. Verify artefacts including gene_to_parameter_map.json [9].
3. Ship a read-only P0 adapter without editing CancerODE [8].
4. Separate the OnCo idea shelf [5] from any CONFLUENCE hypothesis library.
5. Scope: control and disease-specific clearance, not a universal cure [12,14].

3. MATERIALS

OnCo site and API [1,5,6]; IdeaSchema [4]; project-confluence main [7]; PR #9 [8]; TNBC-Metabolic-Strain-MOD [11]; GLOBOCAN/IARC/WHO/ACS [12-16] as context only. No patient data. No ODE refit.

4. FINDINGS

Knowledge is not Evidence is not Mechanism is not Parameter is not Prediction. OnCo confidence.probability is not P(H) [17]. Idea maturity is not evidence_level [4]. refuse_knowledge_as_parameter returns forbidden [8].

Legacy map LDHA -> pyruvate_to_lactate (+0.10 / +0.30) [9,10] is assumed and unidentified. Alias trap: pyruvate_to_lactate is not v2 p_lactate (0.22).

OnCo Ideas carry hypothesis, rationale, test, maturity [4,5]. Bulk ingest forbidden.

WHO: many cancers can be cured if found early and treated well; that is not one cure [14]. Childhood ALL 5-year survival ~90% [16]. Global 2024 burden 20.6 million cases and 9.8 million deaths [12,13]. CONFLUENCE and OnCo do not cure patients [1,7].

5-7. DISCUSSION, LIMITATIONS, NEXT WORK

Do not expand X because OnCo lists more cell types. Cache has no TTL yet [8]. ROS audit outstanding [11]. Next: iterate PR #9 without RHS edits; admit-list hypothesis library; identify p_lactate only after gates stay green.

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