

TROP2 IP Portfolio Analysis

V3 KC Scoring Workflow (RAG-augmented, SS-F/OS-S firewalled, prompt-cached per-sub-dimension model routing)

Executive Summary

This report applies the rDNA.ai four-stage KC scoring pipeline to 347 recent USPTO biopharma patents in the TROP2 (TACSTD2 / EGP-1) target class (antibody-drug conjugates, monoclonal and bispecific antibodies, linker-payload chemistry, CAR-T and other engineered cell therapies, and TROP2 cancer vaccines, indicated for triple-negative and HR+/HER2- breast cancer, urothelial carcinoma, non-small-cell lung cancer, gastric, and other TROP2-expressing solid tumors). Each patent is scored on six Key Component (KC) dimensions on a 1–5 scale and aggregated into a four-scheme ensemble (Meta Baseline / AbbVie / Amgen / Genentech weighting), which determines the patent's investment-grade tier. This is the CORRECTED V3 variant (2026-05-25 methodology audit) — (a) the KC2/KC3/KC4/KC6 composite prompts now embed the V2 holistic-judgment guidance verbatim, (b) no character truncation is applied to the patent text submitted to the model, and (c) TA-bucket multipliers are no longer applied to the patent-level ranking. The TA buckets are retained as display groupings only.

Portfolio-level results are summarized below by therapeutic-area cut, by top assignee, and at the patent level for the calibrated top decile after a V3 pairwise-tournament re-judging pass.

This is a production application of the V3 KC scoring rubric (RAG-augmented, SS-F / OS-S firewalled, per-patent prompt-cached, per-sub-dimension model-routed). The Sonnet 4.5 Quarantine firewall screened all 347 candidate patents and flagged 0 for quarantine. This is one of an expanding set of target-class KC Quality Analyses generated from a four-stage KC scoring pipeline applied to USPTO biopharma issued and published patents from January 2020 through the present.

Key Component (KC) Scoring Framework

Each patent is scored on six Key Component (KC) dimensions on a 1–5 scale. The ensemble score is the mean of the six dimensions (with confidence and standard deviation tracked alongside).

- **KC1** measures abstract and therapeutic specificity: target specificity, therapeutic positioning, structural disclosure, and technical differentiation.
- **KC2** measures independent-claim quality: scope, structure, enforceability, and enablement vulnerability.
- **KC3** measures dependent-claim quality: fallback hierarchy, embodiment coverage, prosecution flexibility, and structural diversity.
- **KC4** measures novelty and differentiation: prior-art positioning, inventive-step quality, and field positioning.
- **KC5** measures specification enablement: enablement gap, structure-function insight, data breadth, and translational completeness.
- **KC6** measures working examples: working/prophetic example quality, structural diversity, experimental rigor, and in vivo / translational validation.

Retrieval-Augmented Generation (RAG) for KC4 Novelty Scoring

The V3 rubric introduces a corpus-internal retrieval-augmented generation (RAG) step that supplies every KC4 sub-dimension (N1 Prior-Art Landscape, N2 Claims Differentiation, N3 Inventive-Step Quality, N4 Field Positioning) with a list of the nearest prior patents in the local Biopharma corpus. The neighbour list is passed

alongside the cached full patent text so the scoring LLM judges novelty against actual nearby filings rather than its internal world knowledge alone.

RAG construction:

- Embedding model: text-embedding-3-small (dim=1536).
- Each Biopharma full-text specification was chunked into $\leq 7,000$ -char blocks across the abstract, claims, and description sections, then each chunk was embedded; a patent-level centroid was computed and L2-normalised.
- Index size: 347 Biopharma specifications $\rightarrow$ 26,107 chunks $\rightarrow$ 347 patent centroids.
- Retrieval: per target patent, return top-20 nearest patent centroids by cosine similarity (self excluded); the result list is passed to the KC4 sub-dim prompts as `rag\_neighbors`. Sub-dims must echo back `rag\_neighbors\_cited` in their JSON response.

RAG results across the corpus:

- Average nearest-neighbour cosine similarity across all scored patents: 0.950.
- Average similarity of the top-20 neighbourhood: 0.889 (a denser neighbourhood pulls KC4 N1/N2 scores down toward 'crowded'; sparser pushes them up toward 'pioneering').
- Corpus average composite KC4 score (post-RAG): 2.59 on the 1–5 scale, covering sub-dims N1, N2, N3, N4.
- The corpus has high internal similarity (mean nearest-neighbour cosine ≥ 0.70), indicating a relatively concentrated TROP2 prior-art landscape; KC4 N1/N2 scoring therefore skews toward 'crowded' for many patents.
- The KC4 sub-dim JSON responses include the `rag\_neighbors\_cited` field so that each novelty score can be traced back to specific neighbour patents from the corpus index.

Most-frequently-cited prior-art neighbours in the corpus:

Rank	Neighbour Patent	Times Cited in Other Patents' Top-20
1	US20230270877A1	80
2	US20250043009A1	75
3	US20210332135A1	73
4	US10653793B2	69
5	US20250138018A1	66
6	US11116846B2	63
7	US10849986B2	61
8	US12310958B2	61
9	US20250064953A1	59
10	US20210069343A1	59
11	US20200246481A1	58
12	US10799597B2	57
13	US20220054648A1	56
14	US20200157224A1	55
15	US20230101266A1	54

Portfolio-Level Metrics

- Total TROP2 USPTO records ingested: 878 (USPTO PPubs full-text fetch via searchWithBeFamily, publication date 2020-01-01 to present; 16 TROP2 / TACSTD2 / EGP-1 / anti-TROP2 / TROP2-ADC / TROP2-bispecific /

TROP2-CAR-T / sacituzumab-govitecan / Trodelvy / datopotamab-deruxtecan / Dato-DXd / Datroway / DS-1062 / linker-payload-chemistry discovery queries)

- Title- and full-text-based classification: Biopharma=347, Diagnostic=64, Device=11, Non_Biopharma=456
- Total Biopharma patents scored: 347
- Average KC scores — KC1: 4.35 KC2: 3.77 KC3: 3.69 KC4: 2.59 KC5: 4.24 KC6: 3.76
- Average ensemble mean across portfolio: 3.656

Investment-grade distribution:

- TIER_2_STRONG: 29
- TIER_3_WATCHLIST: 244
- LOW_PRIORITY: 74

Top Assignees

Rank	Assignee	Patent Count
1	IMMUNOMEDICS, INC	43
2	DAIICHI SANKYO COMPANY, LIMITED	14
3	SICHUAN KELUN-BIOTECH BIOPHARMACEUTICAL CO., LTD	9
4	ACTINIUM PHARMACEUTICALS, INC	8
5	KISOJI BIOTECHNOLOGY INC	7
6	TAKEDA PHARMACEUTICAL COMPANY LIMITED	7
7	MEMORIAL SLOAN KETTERING CANCER CENTER	6
8	BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM	6
9	GILEAD SCIENCES, INC	6
10	BOLT BIOTHERAPEUTICS, INC	5
11	HCW BIOLOGICS, INC	5
12	HARPOON THERAPEUTICS, INC	5
13	JANUX THERAPEUTICS, INC	4
14	GRACELL BIOTECHNOLOGIES CO., LTD	4
15	GENEQUANTUM HEALTHCARE CO., LTD	4

Therapeutic Area Analysis (n ≥ 5 patents)

For each area with at least 5 patents the canonical report shows average KC1–KC6 (1–5 scale), average ensemble mean, average TA-weighted score, and tier distribution. TA buckets are display groupings only in this CORRECTED V3 run. The historical TROP2 TA multipliers (ADC 1.10; Bispecific_Multispecific 1.09; Linker_Payload_Chemistry 1.08; Patient_Stratification 1.07; Monoclonal_Antibody 1.06; CAR_T_Cell_Therapy 1.05; Vaccine_Immunotherapy 1.04; Combination_Therapy 1.02; Formulation_Delivery 1.00; Adjacent 0.98) are NOT applied to the patent-level ranking. ta_weighted_score in the CSV outputs is identical to ensemble_mean.

Therapeutic Area	N	KC 1	KC 2	KC 3	KC 4	KC 5	KC 6	Ens Mean	TA-W	T1 Premium	T1 High	T2	T3 / Low
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TROP2_ADC	19 7	4.4 1	3.7 1	3.6 8	2.5 3	4.3 0	3.8 6	3.65 2	3.65 2	0	20	13 1	46
TROP2_Bispecific_Multispecific	49	4.2 2	3.9 6	3.9 8	2.8 0	4.1 2	3.5 5	3.73 3	3.73 3	0	5	39	5
TROP2_Monoclonal_Antibody	49	4.1 8	3.8 0	3.5 7	2.6 1	4.1 2	3.4 9	3.58 0	3.58 0	0	2	32	15
TROP2_Linkers_Payload_Chemistry	22	4.7 7	3.8 6	3.7 3	2.2 7	4.3 6	4.4 1	3.76 1	3.76 1	0	1	21	0
TROP2_CAR_T_Cell_Therapy	18	4.0 6	3.9 4	3.4 4	2.9 4	4.1 1	3.2 2	3.62 2	3.62 2	0	0	14	4
TROP2_Vaccine_Immunotherapy	6	4.5 0	3.8 3	3.5 0	2.8 3	4.0 0	4.0 0	3.72 5	3.72 5	0	1	5	0

Therapeutic Area Narratives

Each TA narrative below summarises the calibrated cohort: average ensemble mean, the strongest and weakest KC dimensions for the TA, TIER_1_PREMIUM count, and the top three patents by TA-weighted score. Every KC value shown is the rolled-up output of the V3 structured-citation pipeline — each underlying patent has six KC composite scores, each grounded in four per-sub-dimension JSON citations carrying the source model, the model-supplied reason, and a verbatim quote from the patent text. A complete structured-citation example is presented in the Top-Decile section below.

TROP2_ADC (n=197)

Average ensemble mean: 3.652. Highest KC: KC1 (avg 4.41). Lowest KC: KC4 (avg 2.53). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US12275799B2; US12338295B2; US12371508B2.

TROP2_Bispecific_Multispecific (n=49)

Average ensemble mean: 3.733. Highest KC: KC1 (avg 4.22). Lowest KC: KC4 (avg 2.80). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US20240026011A1; US12275798B2; US20220411533A1.

TROP2_Monoclonal_Antibody (n=49)

Average ensemble mean: 3.580. Highest KC: KC1 (avg 4.18). Lowest KC: KC4 (avg 2.61). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US20240226321A1; US20250375524A1; US11119104B2.

TROP2_Linkers_Payload_Chemistry (n=22)

Average ensemble mean: 3.761. Highest KC: KC1 (avg 4.77). Lowest KC: KC4 (avg 2.27). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US12364761B2; US20250161473A1; US20200316054A1.

TROP2_CAR_T_Cell_Therapy (n=18)

Average ensemble mean: 3.622. Highest KC: KC5 (avg 4.11). Lowest KC: KC4 (avg 2.94). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US20250195656A1; US20230381233A1; US20250145679A1.

TROP2_Vaccine_Immunotherapy (n=6)

Average ensemble mean: 3.725. Highest KC: KC1 (avg 4.50). Lowest KC: KC4 (avg 2.83). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US20230381315A1; US20220251239A1; US20250364135A1.

TROP2_Combination_Therapy (n=4)

Average ensemble mean: 3.563. Highest KC: KC5 (avg 4.25). Lowest KC: KC4 (avg 2.50). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US20260007756A1; US20250152644A1; US12440571B2.

TROP2_Patient_Stratification (n=2)

Average ensemble mean: 3.252. Highest KC: KC1 (avg 4.00). Lowest KC: KC3 (avg 2.50). TIER_1_PREMIUM: 0. Top 3 patents (by TA-weighted score): US20210311061A1; US20260085091A1.

Top-Decile Calibration: Pairwise Tournament Results

The top decile (n=35) of the TROP2 biopharma cohort was re-judged against the V3 rubric using full-text specifications and a complete pairwise tournament. The V3 calibration replaced any prior uniform top-decile plateau with a discriminating ranking; calibrated ensemble distribution: mean 4.251, range 4.075–4.525.

Rank	Patent	Assignee	KC1	KC2	KC3	KC4	KC5	KC6	Cal Ens
1	US12371508B2	KISOJI BIOTECHNOLOGY INC	5	5	5	3	5	5	4.525
2	US12338295B2	KISOJI BIOTECHNOLOGY INC	5	5	5	3	5	5	4.525
3	US12275799B2	KISOJI BIOTECHNOLOGY INC	5	5	5	3	5	5	4.525
4	US20240360242A1	KISOJI BIOTECHNOLOGY INC	5	5	5	3	5	5	4.525
5	US20240317887A1	KISOJI BIOTECHNOLOGY INC	5	5	5	3	5	5	4.525
6	US20240327537A1	KISOJI BIOTECHNOLOGY INC	5	5	5	3	5	5	4.525
7	US10744129B2	IMMUNOMEDICS, INC	5	4	4	3	5	5	4.162
8	US20250326860A1	ADAGENE PTE. LTD	5	5	5	3	5	5	4.525
9	US20210395385A1	IMMUNOMEDICS, INC	5	4	5	3	5	5	4.312
10	US20240026011A1	TAKEDA PHARMACEUTICAL COMPANY LIMITED	5	4	5	3	5	5	4.312
11	US20240317886A1	KISOJI BIOTECHNOLOGY INC	5	5	4	3	5	5	4.375
12	US12275798B2	BOEHRINGER INGELHEIM INTERNATIONAL GMBH	5	4	5	3	5	4	4.240
13	US20230263903A1	BOLT BIOTHERAPEUTICS, INC	5	4	5	4	4	3	4.303
14	US20250084183A1	WILLIAM MARSH RICE UNIVERSITY	5	4	4	4	4	5	4.297
15	US20220411533A1	BOEHRINGER INGELHEIM INTERNATIONAL GMBH	5	4	5	3	5	4	4.240

16	US11052081B2	IMMUNOMEDICS, INC	5	4	4	3	5	5	4.162
17	US11253606B2	IMMUNOMEDICS, INC	5	4	5	3	4	5	4.210
18	US20230414778A1	DAIICHI SANKYO COMPANY, LIMITED	5	4	5	3	5	4	4.240
19	US20250312448A1	BOARD OF REGENTS, THE UNIVERSITY OF T...	5	4	4	4	4	4	4.225
20	US20260092117A1	GENENTECH, INC	5	4	4	4	4	4	4.225
21	US12364761B2	IMMUNOMEDICS, INC	5	4	4	3	5	5	4.162
22	US20210017295A1	MEMORIAL SLOAN KETTERING CANCER CENTER	5	4	4	4	4	4	4.225
23	US11192955B2	IMMUNOMEDICS, INC	5	3	5	3	5	5	4.100
24	US20230381315A1	MEMORIAL SLOAN-KETTERING CANCER CENTER (+2)	5	4	5	3	4	4	4.137
25	US11091544B2	RINAT NEUROSCIENCE CORP	5	4	4	3	5	4	4.090
26	US20200071374A1	HCW BIOLOGICS, INC	4	5	5	3	4	4	4.125
27	US20230270877A1	SEAGEN INC	5	4	5	3	4	4	4.137
28	US20250375524A1	INDAPTA THERAPEUTICS, INC	5	4	5	3	4	4	4.137
29	US20250235547A1	UBE CORPORATION	5	4	5	3	4	4	4.137
30	US20250134962A1	SHANGHAI TTM-BIO TECHNOLOGY CO., LTD	5	4	4	3	5	4	4.090
31	US20260007756A1	COHERENT BIOPHARMA LIMITED	4	4	5	3	5	5	4.088
32	US11119104B2	THE TRUSTEES OF COLUMBIA UNIVERSITY L...	5	4	3	4	4	4	4.075
33	US20240108745A1	MEDILINK THERAPEUTICS CO., LTD., CN)	5	4	5	2	5	5	4.075
34	US20240366814A1	THE REGENTS OF THE UNIVERSITY OF CALI...	5	4	3	4	4	4	4.075
35	US20240226321A1	ANJARIUM BIOSCIENCES AG	4	4	5	4	4	4	4.150

V3 Structured-Output Example: #1 US12371508B2 — KISOJI BIOTECHNOLOGY INC

Every row in the table above is backed by a V3 structured-output citation: each patent has six KC composite scores, each grounded in four per-sub-dimension JSON records carrying the source model, the model-supplied reason, and

a verbatim quoted snippet of the patent text (with KC4 sub-dims additionally citing the RAG prior-art neighbour list). For brevity the per-KC tables for the remaining top-decile patents are not reproduced in this report; the complete per-sub-dimension records are persisted in Microprotein_V3_KC_Subscores.csv and the per-patent nested-JSON citation payload is persisted in the kc_score_justification_json column of Microprotein_Top15_Predictions.csv. The single example presented below — the #1 top-decile patent (US12371508B2) — illustrates the structured-output format for each of the six KC dimensions.

Binding agents targeting TROP2 -expressing tumor cells

KC	Score	Reason	Verbatim Quote from the Patent
KC1	5	Patent provides extensive structural disclosure including complete amino acid sequences with SEQ ID NOs, detailed CDR sequences (CDRH1, CDRH2, CDRH3), framework regions, full heavy chain sequences, and specific binding domain information for multiple antibodies (KD001-KD005 and variants).	A single domain antibody (sdAb) that binds to TROP2 comprising a VHH, wherein the VHH comprises: a CDRH1 having the amino acid sequence set forth in SEQ ID NO:55, a CDRH2 having the amino acid sequence set forth in SEQ ID NO:47, and a CDRH3 having the amino acid sequence set forth in SEQ ID NO:48.
KC2	5	C1/C2 at 5 dominate: comprehensive claim suite (sdAb, homodimer, IgG1-format variants) anchored in specific SEQ IDs and CDR/FR Markush structures. Broad comprising scope with strong species exemplification (KD001-KD069) mitigates Amgen risk.	a CDRH1 having the amino acid sequence set forth in SEQ ID NO:55, a CDRH2 having the amino acid sequence set forth in SEQ ID NO:47, and a CDRH3 having the amino acid sequence set forth in SEQ ID NO:48
KC3	5	28 dependent claims with multi-level nesting (D1=5), covering CDR/FR/VH/heavy chain hierarchy plus hinge/CH2/CH3 alternatives (IgG1), homodimer format, and three independent claim families providing strong fallback (D3=4) and structural diversity (D4=5).	binding agents include antibodies and antigen-binding fragments thereof such as...single domain antibodies...IgGs...Fab, Fab', F(ab').sub.2...scFVs...diabody, triabody, tetrabody...VHH-Fc fusions
KC4	3	N1 crowded (2) caps composite; however N3=4 (novel CRD epitope, FR2-mediated binding, slow koff, potent ADCP at 0.1mg/kg) and N2/N4=3 justify lifting above incremental. Meaningful sdAb advance in crowded TROP2 space.	CDR3 of KD012 forms a clip fitting into a groove within the CRD...framework region 2 of the KD012 sdAb also contributes to the binding to TROP2 which appears to be an unusual feature [RAG anchor: US12338295B2, US12275799B2, US20240360242A1...]
KC5	5	Extensive in vivo efficacy data in multiple xenograft models (MDA-MB-453, MDA-MB-231, BxPC-3, T.Tn, MDA-MB-468) with dose-response, scheduling, and pharmacokinetics. Cynomolgus monkey toxicity study at 100 mg/kg demonstrates clinical readiness.	100 mg/kg of KD002 and KD005 once weekly for up to at least three doses were well tolerated in cynomolgus non-human primates.
KC6	5	W1/W2/W4 all 5: 15+ working examples spanning KD001-KD069 with humanized variants, bispecifics, conjugates; multiple xenograft	NCG mice or NCG mice bearing MDA-MB-453, MDA-MB-231, BxPC-3, T.Tn tumors...treated with KD001-KD005...dose/response study...0.5, 2, 8,

		models with dose-response, schedule, PK, NHP tolerability; co-crystal structure. W3=4 only minor gap.	30 mg/kg...pharmacokinetic parameters...half-life of KD004 is approximately 60 hours
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KC4 rag_neighbors_cited (top prior-art neighbours from the corpus that informed the N1–N4 novelty scoring): US12338295B2, US12275799B2, US20240360242A1, US20240327537A1, US20240317886A1, US20240317887A1, US20250154278A1, US20230383007A1, US20240207432A1, US12458818B2...

Top-Decile Assignee Ranking

Top-decile assignees are ranked by frequency in the calibrated top-decile cohort, then by best calibrated patent rank, then by average calibrated ensemble mean.

Rank	Assignee	Count	Best Patent Rank	Avg Cal Rank	Avg Cal Ens
1	KISOJI BIOTECHNOLOGY INC	7	1	4.57	4.504
2	IMMUNOMEDICS, INC	6	7	15.5	4.185
3	ADAGENE PTE. LTD	1	8	8.0	4.525
4	TAKEDA PHARMACEUTICAL COMPANY LIMITED	1	10	10.0	4.312
5	BOEHRINGER INGELHEIM INTERNATIONAL GMBH	2	12	13.5	4.24
6	BOLT BIOTHERAPEUTICS, INC	1	13	13.0	4.303
7	WILLIAM MARSH RICE UNIVERSITY	1	14	14.0	4.297
8	DAIICHI SANKYO COMPANY, LIMITED	1	18	18.0	4.24
9	BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM	1	19	19.0	4.225
10	GENENTECH, INC	1	20	20.0	4.225
11	MEMORIAL SLOAN KETTERING CANCER CENTER	1	22	22.0	4.225
12	MEMORIAL SLOAN-KETTERING CANCER CENTER (+2)	1	24	24.0	4.137
13	RINAT NEUROSCIENCE CORP	1	25	25.0	4.09
14	HCW BIOLOGICS, INC	1	26	26.0	4.125
15	SEAGEN INC	1	27	27.0	4.137

16	INDAPTA THERAPEUTICS, INC	1	28	28.0	4.137
17	UBE CORPORATION	1	29	29.0	4.137
18	SHANGHAI TTM-BIO TECHNOLOGY CO., LTD	1	30	30.0	4.09
19	COHERENT BIOPHARMA LIMITED	1	31	31.0	4.088
20	THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY...	1	32	32.0	4.075
21	MEDILINK THERAPEUTICS CO., LTD., CN)	1	33	33.0	4.075
22	THE REGENTS OF THE UNIVERSITY OF CALIFORNIA	1	34	34.0	4.075
23	ANJARIUM BIOSCIENCES AG	1	35	35.0	4.15

Bottom-Decile Assignee Ranking

Bottom-decile assignees are ranked by frequency in the bottom TROP2 biopharma decile, then by weaker average original ensemble score.

Rank	Assignee	Count	Avg Original Score	Weakest Score
1	REMEGEN CO., LTD	1	2.703	2.703
2	ARBELE LIMITED	1	2.875	2.875
3	ACTINIUM PHARMACEUTICALS, INC	2	3.037	2.88
4	MERCK SHARP & DOHME LLC (+1)	1	2.915	2.915
5	EISAI R&D MANAGEMENT CO., LTD	1	2.922	2.922
6	BIOBRICS LIFE SCIENCE CO., LTD	1	2.938	2.938
7	ADRIATX S.R.L	1	2.94	2.94
8	NOVOCURE GMBH	1	2.94	2.94
9	WANG (+1)	1	2.965	2.965
10	ISTITUTI FISIOTERAPICI OSPITALIERI (+1)	1	2.965	2.965
11	HANGZHOU DAC BIOTECH CO., LTD	1	2.985	2.985
12	BENHEALTH BIOPHARMACEUTIC CO., LTD	1	2.987	2.987
13	SYSTIMMUNE, INC.	1	3.0	3.0

	(+1)			
14	SICHUAN KELUN-BIOTECH BIOPHARMACEUTICAL CO., LTD	3	3.115	3.018
15	JIANGSU HEALTHY LIFE INNOVATION MEDICAL TECHNOLOGY C...	1	3.018	3.018
16	GENCYTE THERAPEUTICS, INC	2	3.067	3.03
17	ANTIBODY BIOPHARM, INC	1	3.09	3.09
18	BIO-THERA SOLUTIONS, LTD	1	3.09	3.09
19	G1 THERAPEUTICS, INC	1	3.09	3.09
20	STRATA ONCOLOGY, INC	1	3.09	3.09
21	ANTIBODY BIOPHARM INC	1	3.105	3.105
22	ONCOHOST LTD	1	3.122	3.122
23	HARPOON THERAPEUTICS, INC	2	3.189	3.152
24	GILEAD SCIENCES, INC	1	3.163	3.163
25	SHENZHEN UNIVERSITY (+1)	1	3.163	3.163
26	SHANGHAI FUDAN-ZHANGJIANG BIO-PHARMACEUTICAL CO., LTD	1	3.163	3.163
27	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	1	3.175	3.175
28	JIANGNAN UNIVERSITY	1	3.177	3.177
29	KYUNGPOOK NATIONAL UNIVERSITY INDUSTRY-ACADEMIC COOP... (+1)	1	3.177	3.177
30	LEVENA BIOPHARMA CO., LTD. (+1)	1	3.192	3.192

Top 15 Tournament Calibration TROP2 Patents

Each top-15 patent below is presented with: (a) the patent number and confirmed assignee, (b) the patent title, (c) the calibrated KC profile and pairwise tournament record, and (d) the analyst narrative. Every calibrated KC value shown is the V3 composite of four per-sub-dimension scores, each backed by a structured-citation record (score, source model, model-supplied reason, verbatim quote, and — for KC4 — rag_neighbors_cited). The complete per-sub-dimension records are persisted in the V3_KC_Subscores.csv and the Top15_Predictions.csv (kc_score_justification_json column). A worked example of the full structured-output format for one patent is shown in the Top-Decile section above.

#1 US12371508B2 — KISOJI BIOTECHNOLOGY INC

Binding agents targeting TROP2 -expressing tumor cells

Calibrated KC profile: KC1=5, KC2=5, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.525; pairwise record=34-0.

V3 pairwise tournament: 34W / 0L over top-decile (n=35).

#2 US12338295B2 — KISOJI BIOTECHNOLOGY INC

Binding agents targeting TROP2 -expressing tumor cells

Calibrated KC profile: KC1=5, KC2=5, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.525; pairwise record=33-1.

V3 pairwise tournament: 33W / 1L over top-decile (n=35).

#3 US12275799B2 — KISOJI BIOTECHNOLOGY INC

Binding agents targeting TROP2 -expressing tumor cells

Calibrated KC profile: KC1=5, KC2=5, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.525; pairwise record=32-2.

V3 pairwise tournament: 32W / 2L over top-decile (n=35).

#4 US20240360242A1 — KISOJI BIOTECHNOLOGY INC

BINDING AGENTS TARGETING TROP2 -EXPRESSING TUMOR CELLS

Calibrated KC profile: KC1=5, KC2=5, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.525; pairwise record=30-4.

V3 pairwise tournament: 30W / 4L over top-decile (n=35).

#5 US20240317887A1 — KISOJI BIOTECHNOLOGY INC

BINDING AGENTS TARGETING TROP2 -EXPRESSING TUMOR CELLS

Calibrated KC profile: KC1=5, KC2=5, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.525; pairwise record=29-5.

V3 pairwise tournament: 29W / 5L over top-decile (n=35).

#6 US20240327537A1 — KISOJI BIOTECHNOLOGY INC

BINDING AGENTS TARGETING TROP2 -EXPRESSING TUMOR CELLS

Calibrated KC profile: KC1=5, KC2=5, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.525; pairwise record=28-6.

V3 pairwise tournament: 28W / 6L over top-decile (n=35).

#7 US10744129B2 — IMMUNOMEDICS, INC

Therapy of small-cell lung cancer (SCLC) with a topoisomerase-I inhibiting antibody-drug conjugate (ADC) targeting Trop-2

Calibrated KC profile: KC1=5, KC2=4, KC3=4, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.162; pairwise record=28-6.

V3 pairwise tournament: 28W / 6L over top-decile (n=35).

#8 US20250326860A1 — ADAGENE PTE. LTD

ANTI-CD3 ANTIBODIES AND METHODS OF USE THEREOF

Calibrated KC profile: KC1=5, KC2=5, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.525; pairwise record=26-8.

V3 pairwise tournament: 26W / 8L over top-decile (n=35).

#9 US20210395385A1 — IMMUNOMEDICS, INC

*EFFICACY OF ANTI-TROP-2-SN-38 ANTIBODY DRUG CONJUGATES FOR THERAPY OF TUMORS
RELAPSED/REFRACTORY TO CHECKPOINT INHIBITORS*

Calibrated KC profile: KC1=5, KC2=4, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.312; pairwise record=25-9.

V3 pairwise tournament: 25W / 9L over top-decile (n=35).

#10 US20240026011A1 — TAKEDA PHARMACEUTICAL COMPANY LIMITED

CONSTRAINED CONDITIONALLY ACTIVATED BINDING PROTEINS

Calibrated KC profile: KC1=5, KC2=4, KC3=5, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.312; pairwise record=24-10.

V3 pairwise tournament: 24W / 10L over top-decile (n=35).

#11 US20240317886A1 — KISOJI BIOTECHNOLOGY INC

BINDING AGENTS TARGETING TROP2 -EXPRESSING TUMOR CELLS

Calibrated KC profile: KC1=5, KC2=5, KC3=4, KC4=3, KC5=5, KC6=5; calibrated ensemble=4.375; pairwise record=23-11.

V3 pairwise tournament: 23W / 11L over top-decile (n=35).

#12 US12275798B2 — BOEHRINGER INGELHEIM INTERNATIONAL GMBH

Tri-specific binding molecules

Calibrated KC profile: KC1=5, KC2=4, KC3=5, KC4=3, KC5=5, KC6=4; calibrated ensemble=4.240; pairwise record=23-11.

V3 pairwise tournament: 23W / 11L over top-decile (n=35).

#13 US20230263903A1 — BOLT BIOTHERAPEUTICS, INC

PYRAZOLOAZEPINE IMMUNOCONJUGATES, AND USES THEREOF

Calibrated KC profile: KC1=5, KC2=4, KC3=5, KC4=4, KC5=4, KC6=3; calibrated ensemble=4.303; pairwise record=22-12.

V3 pairwise tournament: 22W / 12L over top-decile (n=35).

#14 US20250084183A1 — WILLIAM MARSH RICE UNIVERSITY

ENGINEERED COMPOSITIONS FOR BONE-TARGETED THERAPY

Calibrated KC profile: KC1=5, KC2=4, KC3=4, KC4=4, KC5=4, KC6=5; calibrated ensemble=4.297; pairwise record=22-12.

V3 pairwise tournament: 22W / 12L over top-decile (n=35).

#15 US20220411533A1 — BOEHRINGER INGELHEIM INTERNATIONAL GMBH

Novel Tri-specific Binding Molecules

Calibrated KC profile: KC1=5, KC2=4, KC3=5, KC4=3, KC5=5, KC6=4; calibrated ensemble=4.240; pairwise record=19-15.

V3 pairwise tournament: 19W / 15L over top-decile (n=35).

Methodology

The initial TROP2 analysis ingested 878 USPTO records via 16 USPTO PPubs full-text discovery queries crossing the gene/protein nouns (TROP2, TROP-2, TACSTD2, EGP-1) with the targeting / binding / conjugation vocabulary (antibody, conjugate, target, bind, inhibitor, antagonist, modulator), TROP2 modality language (anti-TROP2 antibody, TROP2 ADC, TROP2 bispecific, TROP2 CAR-T), and the marketed-asset drug names (sacituzumab govitecan / Trodelvy / IMMU-132 / hRS7; datopotamab deruxtecan / Dato-DXd / Datroway / DS-1062) across abstract, title, and claim fields, restricted to publication date 2020-01-01 to present. Title- and full-text-based classification yielded 347 Biopharma, 64 Diagnostic, 11 Device, and 456 Non-Biopharma classifications. The 347 biopharma patents with a confirmed assignee were assigned to one of ten TROP2 therapeutic-area buckets (ADC, Bispecific_Multispecific, Linker_Payload_Chemistry, Patient_Stratification, Monoclonal_Antibody, CAR_T_Cell_Therapy, Vaccine_Immunotherapy, Combination_Therapy, Formulation_Delivery, Adjacent). In this CORRECTED V3 run the TA buckets are display groupings only; the per-bucket multipliers used in the original V3 run (0.98–1.10) are NOT applied to the patent-level ranking. TROP2 has no kinase activity (it is an extracellular tumor-associated antigen), so unlike HER2 there is no Small_Molecule_TKI bucket; instead a Linker_Payload_Chemistry bucket captures the substantial ADC-component IP layer (cleavable / non-cleavable linkers, valine-citrulline / PAB self-immolative spacers, topoisomerase-1 inhibitor payloads such as deruxtecan and SN-38/govitecan, site-specific conjugation, DAR control).

All KC scoring was performed by Anthropic LLM agents reading the local full-spec corpus (abstract + independent claims + dependent claims + specification body, truncated to fit the 200K-token context window). The per-patent loop uses prompt caching (cache_control=ephemeral on the full patent text) and routes each of the 24 KC sub-dimensions to a per-sub-dim model: Haiku 4.5 for mechanical sub-dims (A1, A3, C1, C3, D1, E3, W1, W4) and Sonnet 4.5 for the remaining 16 sub-dims, including the 7 'holistic' sub-dims (A4, C4, D3, N1, N3, N4, E1). Opus 4.7 is reserved for the four KC2/KC3/KC4/KC6 composite calls. (Original V3 routed the 7 holistic sub-dims to Opus; the corrected variant re-routes them to Sonnet because of the larger cached_block produced by the audit's truncation fix.) KC4 sub-dims (N1–N4) additionally receive RAG top-20 nearest-neighbour context from a text-embedding-3-small chunk-level vector index over the entire scored Biopharma corpus. Composite KC scores follow the V2 rules: KC1 and KC5 = median of sub-dimension scores rounded to nearest integer (mechanical, no LLM call); KC2, KC3, KC4, KC6 = holistic Opus composite per the V2-anchored per-KC composite prompt (the corrected V3 variant embeds the V2 sub-dim definitions and a V2-derived 1–5 KC-composite rubric directly into each composite prompt). Ensemble scoring applied four weighting schemes (Meta Baseline / AbbVie / Amgen / Genentech) aggregated into ensemble_mean ± ensemble_std with HIGH / MODERATE / LOW confidence. Tier thresholds are absolute (TIER 1 PREMIUM ≥ 4.5; TIER 1 HIGH 4.0–4.49; TIER 2 MODERATE 3.0–3.99; TIER 3 SPECULATIVE < 3.0).

Before any KC scoring, a Sonnet 4.5 SS-F (Single-Shot Filter) / OS-S (One-Sided Safe) firewall screened every patent's title + abstract + first 2,000 chars of claims + first 2,000 chars of description against the V3 Quarantine

Taxonomy (Q1 weaponization, Q2 illicit drug synthesis, Q3 CSAM, Q4 pseudoscience-asserting-biomed, Q5 hate-speech-jargon-with-biomed). For this corpus 0 of 347 candidate patents were quarantined. The top decile (n=35) was then re-judged via a complete pairwise tournament (Sonnet 4.5 judge) to separate platform composition-of-matter assets from narrower follow-on, delivery-only, or crowded-prior-art filings. Detailed V3 outputs (per-sub-dim scores with verbatim evidence quotes and model attribution; RAG neighbour lists; tournament pairings; calibrated rankings) are available in TROP2_V3_KC_Subscores.csv, TROP2_Top15_Predictions.csv (with JSON citation-based KC justifications), TROP2_Top_Decile_V3_Calibrated_KC_Scores.csv, and the V3 workflow manifest at raw/TROP2_V3_KC_Workflow_Manifest.json.

Canonical V3 rubric reference:

/Product_Roadmap/University_IP/_KC_Methodology/V3_Rubric/improved_scoring_prompt_v3.md.