Linked report — royalty-rate provisions in SEC-filed biopharma agreements signed 2018 or later

Every line below except the headings and this note is copied verbatim from the generated analysis report `Product_Roadmap/Ex10_provisions/topics/royalty_rates/analyze/report.md`, including its review-state lines, which that report renders from the findings ledger `analyze/R3_royalty/ledger.json`. Nothing here is retyped.

Rendered by `scripts/analyze_royalty_report.py` from the FINAL build (`topics/royalty_rates/analyze/codes_FINAL.json` and the FINAL reads). Every count below is computed by that script from its inputs. This report describes the visible text of SEC-filed exhibits only. It is not legal advice, not a freedom-to-operate view, and not a view on whether any clause is enforceable or what it is worth to anyone. Nothing here infers what a redaction marker hides.

KC (claim-strength) scoring was not used for this topic; nothing in this report asserts the strength of any patent claim.

1. Population and exclusion waterfall (unit: contract records)

Before the cohort (`topics/royalty_rates/analyze/inventory_A.json`): - contracts in record: 416 contracts. - excluding record HOLD / D1 conflict (held contracts outside the record are named separately): 415 contracts (1 dropped: Sybleu-DyoBiotechnologies). - decision IN (UNDETERMINED excluded: no visible rate by definition): 413 contracts (2 dropped: IMab-lMab-Jumpcan-JiangsuJiyuan, Talicia-Cumberland). - D1 date printed (NOT_PRINTED excluded, named): 403 contracts (10 dropped: Hadasit-CellCure, Institutde-MissouriBotanical-Sequoia, JohnsHopkins-BullfrogAl, Nls1-EurofarmaLaboratorios, PropancPty-UniversityOf, SciSparc-Polyrizon, SiloPharma-AikidoPharma, UniversityCourt-NuvectisPharma, Universityof-OrphazymeApS, Universityof-Zolovax). - D1 date 2018-01-01 or later (amendment 19 R19-4): 279 contracts (124 dropped: D1 date before 2018-01-01, counted, not listed). - Held and named (inventory list, 10 contract records, none in the cohort; the record HOLD above is one of them; a contract id listed twice is two record contracts that share one D1 name): BioXcel-DrKrishnan (shared_library_conflict); CedarsSinai-Enviro (2020) ×2 (duplicate_contract_id); LieberInstitute-BullFrogAi (shared_library_conflict); Sybleu-DyoBiotechnologies (HOLD (record)); Vertex-CysticFibrosis (shared_library_conflict); Yissum-ClearmindMedicine (2024) ×2 (duplicate_contract_id); Yissum-Lipovac ×2 (duplicate_contract_id). - **Cohort: 279 contracts** (Find decision IN, D1 date 2018-01-01 or later). Each is coded in the FINAL build.

A funnel (each contract counted once, at the first condition it fails, in the build's order; denominator 279 cohort contracts):

step	condition failed	excluded	remaining

step	condition failed	excluded	remaining
1	subject not biopharma (R20-1)	23	256
2	duplicate alliance (ADJ-ROY-12 / LEAD-ROY-1)	6	250
3	alliance class not LICENCE / COLLABORATION / OPTION	15	235
4	licensor type not CORPORATE	58	177
5	exclusivity (or exclusivity lead) not EXCLUSIVE / EXCLUSIVE_FIELD_OR_TERRITORY	12	165
6	root commenced before 2018 (amended-and-restated / amendment of an unfiled base)	5	160
7	pass-through royalty not printed	5	155
8	royalty schedule not in the root (schedule_source != ROOT)	3	152
9	structure without an EFR (not FLAT / TIERED / STEPPED_BY_EVENT / TIERED_AND_STEPPED)	15	137
10	stage at signing UNRESOLVED	21	116

A-eligible: 116 of 279 cohort contracts.

- Step 1, subject not biopharma (R20-1): 23 contracts. R20-1 operationalisation, verbatim from `topics/royalty_rates/topic.json` amendment 20 (recorded 2026-10-27): “the subject is biopharma when the licensed or collaboration product is, or is being developed to be, a drug, biologic, vaccine, cell or gene therapy, or in-vitro / laboratory diagnostic, for human or veterinary use, or a platform or technology for discovering, making or delivering one. Not biopharma: consumer cannabis/hemp/CBD goods not developed as a drug, foods and beverages, cosmetics, apparel and trademark licences, consulting/services, and medical devices not combined with a drug.” Excluded: Aphria-CharlottesWeb, AppliedBiology-Taisho, AprApplied-Eton, BioAdaptives-ThomasJ, CleneNanomedicine-4life, DatavaultAi-Scilex, Docklight-HighPark, Duo-LucyPet, Gelesis-CmsBridging, GlobalBioLife-Chemia, GoodnessGrowth-GrownRogue, GskConsumer-Novartis-NeuroMetrix, LiftedLiquids-DiamondSupply, MarvEnterprises-PremierBiomedical-TechnologyHealth, Miromatrix-RepriseBiomedical, PathwayRx-SundialGrowers-IgorKovalchuk-OlgaKovalchuk-DarrylHudson, ReshapeLifesciences-BioradMedysis, SanofiUs-DarioHealth, Tauriga-ThinkBig, TikunOlam-JayPharma, TommyBahama-Boomer, TrailerPark-HemptownOrganics-HtNaturals, Universityof-Safecoat.
- Step 2, duplicate alliance (ADJ-ROY-12 / LEAD-ROY-1): 6 contracts, each named with the record contract that represents its alliance: Acer-Relief (2021-01-25) → Acer-Relief (2021-03-19); Biofirst-ForSeeConEye → Abvc-ForSeeConEye; Biolite-OncoX (2024-05-14) → Abvc-OncoX (2024-05-14); Biolite-OncoX (2024-05-23) → Abvc-OncoX (2024-05-23); Oncotelic-Autotelic (2021-08-31) → Oncotelic-Autotelic (2021-09-30); Rgene-OncoX (2024-04-16) → Abvc-OncoX (2024-04-16).
- Step 3, alliance class not LICENCE / COLLABORATION / OPTION: 15 contracts: Acelrx-Tetraphase, AndrewBateman-HughP-BabykumariChitramuthu-DenisG-AlphaCognition-NeurodynLife, Biofrontera-BiofronteraPharma, Context-Tyligand,

Exicure-Ipsen, INmuneBio-Xencor, Nabriva-Hovione, Onotelic-GoldenMountain, Sepset-HunanSanway-HunanXiang, Sunshine-SirMortimer-DrGerald, Theralink-Imac-GeorgeMason-TheranosticsHealth, Theralink-Imac-VanderbiltUniversity, Tracon-Enviro-KairosPharma, Universityof-Sunshine, Voltron-Hoth.

- Step 4, licensor type not CORPORATE: 58 contracts, by licensor type: ACADEMIC 37, GOVERNMENT 2, INDIVIDUAL 2, MIXED 2, NONPROFIT_OTHER 14, UNRESOLVED 1 (named in Appendix A).
- Step 5, exclusivity (or exclusivity lead) not EXCLUSIVE / EXCLUSIVE_FIELD_OR_TERRITORY: 12 contracts: Alvotechhf-AlvogenLux, Arpeggio-IntrinsicMedicine, Genmab-AbbVie, JiYan-SlBio, Lisata-Redwood, LonzaSales-Anelixis, Novodx-CaringBrands, PapyrusTherapeutic-HealthtechWound, Pinata-Trustfeed, Pulmatrix-Cipla, SplashBeverage-Lupvindol, VeronaPharma-LigandUk.
- Step 6, root commenced before 2018 (amended-and-restated / amendment of an unfiled base): 5 contracts: BiofronteraPharma-Biofrontera, ElesztoGenetika-Oragenics-Intrexon, Ferring-SciVac-VbiVaccines, InflaRx-Staidson-BeijingDefengrei, OspedaleSan-Genenta.
- Step 7, pass-through royalty not printed: 5 contracts: IMab-Tj, MaynePharma-Therapeuticsmd, Moleculin-AnimalLife, Moleculin-Wpd, Qualigen-PanRas.
- Step 8, royalty schedule not in the root (schedule_source != ROOT): 3 contracts: Aquestive-AtnahsPharma, DaiichiSankyo-Esperion (2021), IntegralMolecular-Context.
- Step 9, structure without an EFR (not FLAT / TIERED / STEPPED_BY_EVENT / TIERED_AND_STEPPED): 15 contracts: Abpro-Celltrion, Acer-Relief (2023), Aptevo-Niowave, FabreKramer-Aytu, Lannett-NorthSouth-HecPty, Lannett-SunshineLake, Neuren-Acadia, Pfizer-Akcea-Ionis, Pharmala-JupiterNeurosciences, Point-LantheusTwo-Lantheus, PrimeGen-PrimeGenUs, PsyenceBiomed-FilamentHealth, Quoin-Aft, Quoin-WinhealthInvestment, Roche-Genentech-Regeneron.
- Step 10, stage at signing UNRESOLVED: 21 contracts: Abvc-OncoX (2024-05-14), Argent-SplashBeverage, Aum-Newsoara, BMS-AdMIRx, BenuviaOperations-Chromocell, BluejayDiagnostics-ToraylIndustries, Clywedog-Viriom, DocpharmaSingle-CosmosHealth, EgBioMed-YongDing (2024-06-25), EgBioMed-YongDing (2024-09-30), Immune-Forte, Life-Gbs, LiminatusPharma-TargetedDiagnostics, Miralogx-Skny, Miralogx-Telomir, ProPhase-GlobalBioLife (2022-03-17), Proteomedix-Immunovia, Qualigen-YiXin, Senotherapeutix-EosSenolytix, ShearKershman-InnovativeMedtech, ZeusDiagnostics-Pointof.

Straddlers (effective date and execution date on opposite sides of 2018-01-01; inventory list; D1 rule decides cohort membership): - CedarsSinai-Stemvax: D1 EFFECTIVE_DATE 2018-07-23; other side EXECUTION_DATE 2014-04-07; in the cohort (A: excluded at licensor_type). - BioprojetSociete-Harmony: D1 PREAMBLE_DATE 2017-07-28; other side EXECUTION_DATE 2029-03-30; outside the cohort. - JoslinDiabetes-EkfDiagnostics: D1 EXECUTION_DATE 2017-07-25; other side EXECUTION_DATE 2018-10-11; outside the cohort. - Universityof-Regenerex: D1 EFFECTIVE_DATE 2017-02-26; other side EXECUTION_DATE 2018-10-31; outside the cohort. - NeurodynLife-AlphaCognition: D1 EFFECTIVE_DATE 2020-01-01; other side EXECUTION_DATE 2006-12-07; in the cohort (A:

eligible). - AndrewBateman-HughP-BabykumariChitramuthu-DenisG-AlphaCognition-NeurodynLife: D1 EFFECTIVE_DATE 2020-11-03; other side EXECUTION_DATE 2006-12-07; in the cohort (A: excluded at alliance_class).

Record issues (listed in `analyze/ADJ_ROY_RULES.md`, not silently fixed): - None of these changes a D1 date. A reader never changes a D1 date (roy-1.1). - **Ferring-SciVac-VbiVaccines:** B reports signing 2022-10-18 against D1 2021-09-01. - **TommyBahama-Boomer:** the 8-K gives 2020-01-10. The contract also falls under R20-1 review. - **Yissum-Clearmind:** signed 2022-07-31, later than the printed effective date. A straddler-type date anomaly. - **NeurodynLife-AlphaCognition:** the I0-EMBEDDED amendment of 2020-11-04 re-dates the agreement. - **Abvc-OncoX_2024-04-16:** the second filed version is a different agreement. - **Oncotelic:** the term sheet of 2021-08-31 and the licence of 2021-09-30 are one deal (ADJ-ROY-12). - **Lipoxen:** the agreement implements a 2011 co-development agreement. R20-2 decides from I0's printed recital whether it is a restatement or amendment, or an original.

2. How the codes were made

- Codebook `analyze/codebook_royalty.json` roy-1.2 (amendments in the file: roy-1.1, roy-1.2). **Disclosure:** WRITTEN AFTER CODES WERE VISIBLE. The producer who wrote this codebook had seen: the Find screening rows (one reader per row: structure, rates_visible, thresholds, instrument_class, parties), the Harvest tiered-EFR table harvest/efr_tiered.jsonl (two blind readers + lead adjudication), the feasibility script output (analyze/reference/feasibility_2026-10-26.py) and the inventory (analyze/inventory.md: 289 contracts in the A/B cohort; screening structure FLAT 137, TIERED 72, STEPPED 52, OTHER 18, mixed 10). Atoms and value lists were shaped with that knowledge, as OP-21-01's rule for Article 22 and codebook ira-1.0 for Article 23 were. Consequences, stated: (1) agreement between screening codes / Harvest EFR and the Analyze readers is NOT evidence of independence; (2) readers are blind to screening rows, the Harvest EFR table, the feasibility output, the inventory and each other (brief: off-limits paths), so reader-vs-reader agreement is the independent measure; screening/Harvest vs FINAL agreement is reported as a diagnostic only. Mark's analyses A/B/C were set in HANDOFF_analyze_royalty_rates_2026-10-26.md section 1 and his rulings were recorded as amendment 19 (commit 51829da3) before this codebook.
- Readers (unit: contracts): reader A coded all 279 cohort contracts; reader B coded 226 (pilot 6, MUST 202, RANDOM 18; `analyze/work/reader_B_selection_royalty.json`, rule: pilot + MUST (UNMEASURED | A-text-eligible | eligibility undecided on A's read) + RANDOM random.Random(seed).sample(sorted(remainder), ceil(25%)); seed 20261026); 53 contracts were read by A only.
- The pilot reads were re-coded post-hoc by reader B itself. MUST was chosen from reader A's read, so its agreement is not a random-sample statistic. Only RANDOM estimates the single-reader error on the A-only contracts.

atom	A = B (contracts, of 226 read by both)	kappa
alliance_class	220/226	0.935

atom	A = B (contracts, of 226 read by both)	kappa
licensor_type	225/226	0.976
exclusivity	214/226	0.911
exclusivity_effective	214/226	0.908
territory	222/226	0.972
stage_at_signing	188/226	0.795
schedule_source	225/226	0.887
structure	209/226	0.883
tiers	222/226	n/a
max_rate	219/226	n/a
efr_200M	214/226	n/a
efr_500M	214/226	n/a
efr_1B	214/226	n/a
commenced_pre2018	226/226	1.0
pass_through_unprinted	224/226	0.829
A_eligible	201/226	0.774

- PILOT: 2 of 6 contracts disagree on at least one codebook atom (Wilson 95% 0.097–0.700); derived A_eligible agrees 5/6.
- MUST: 68 of 202 contracts disagree on at least one codebook atom (Wilson 95% 0.275–0.404); derived A_eligible agrees 178/202.
- RANDOM: 9 of 18 contracts disagree on at least one codebook atom (Wilson 95% 0.290–0.710); derived A_eligible agrees 18/18.
- Single-reader error estimates for the 53 A-only contracts (RANDOM stratum): any-atom disagreement 9/18 (Wilson 95% 0.290–0.710); A_eligible disagreement 0/18 (Wilson 95% 0.000–0.176).
- Final reads by `final_source` label (contracts, of 279): A (B agreed) 109; A (B agreed); lead patch LEAD-ROY-1 1; A (B agreed); lead patch LEAD-ROY-3 1; A (single read) 40; ADJ (A/B agreed; lead rule applied) 34; ADJ (A/B agreed; lead rule applied); lead patch LEAD-ROY-2 1; ADJ (X/Y disagreement adjudicated) 78; ADJ (X/Y disagreement adjudicated); lead patch LEAD-ROY-1 2; ADJ (single read; lead rule applied) 13.
- Blind adjudication: the adjudicator saw each disputed pair as readers X and Y; which of A and B each label stands for was kept apart from the adjudicator (`analyze/ADJ_BRIEF_ROYALTY.md`). Reads decided that way: 80.

ADJ-ROY rules (`analyze/ADJ_ROY_RULES.md`): written after both readers' codes were visible and before any adjudication; not ratified by Mark. Contracts whose FINAL read lists each rule in `rules_applied`: - ADJ-ROY-1 — representative schedule (R19-5 order): 10 contracts. - ADJ-ROY-2 — field-limited exclusivity breadth: 35 contracts. - ADJ-ROY-3 — co-exclusive development + exclusive commercialisation: 1 contract. - ADJ-ROY-4 — "reduced to Y%" vs "reduced by Z%": 24 contracts. - ADJ-ROY-5 — tier application UNCLEAR

(computed by the build, not by a reader): 3 contracts. - ADJ-ROY-6 — rates that vary by territory, product type, indication, manufacturer or patent status: 20 contracts. - ADJ-ROY-7 — “50% of the Worldwide Markets” (ABVC / BioLite / Rgene / OncoX family): 4 contracts. - ADJ-ROY-8 — stage edge cases (rules (a)–(d) of roy-1.1 unchanged): 43 contracts. - ADJ-ROY-9 — royalty vs commercialisation payment (R19-3): 15 contracts. - ADJ-ROY-10 — profit share with only a reverse or contingent royalty: 6 contracts. - ADJ-ROY-11 — square-bracketed legible values; number words: 2 contracts. - ADJ-ROY-12 — the same alliance filed as two record contracts: 4 contracts. - ADJ-ROY-13 — royalty-free bands (tool fix T3): 3 contracts. - ADJ-ROY-15 — add-on rates: 1 contract. - ADJ-ROY-16 — ratchets and whole-year surcharges: 2 contracts. - ADJ-ROY-17 — royalties to a non-licensor counterparty: 1 contract. - ADJ-ROY-18 — sublicence-income alternatives and shares of all income: 3 contracts. - ADJ-ROY-20 — licensor type edge cases (entity form decides; codebook rule): 9 contracts. - ADJ-ROY-21 — amendment whose base is a different record contract: 2 contracts. - ADJ-ROY-22 — I0 with no royalty schedule; embedded amendment as the only schedule: 2 contracts. - ADJ-ROY-23 — contradictory or truncated grant clauses: 1 contract. - ADJ-ROY-24 — unmarked blank thresholds or rates: 1 contract. - ADJ-ROY-25 — reverse-direction, to-be-negotiated and penalty rates: 18 contracts. - ADJ-ROY-26 — exclusivity or territory that changes over the term: 2 contracts.

What each rule moved: among the contracts listing the rule, the contracts whose FINAL code differs from reader A’s code (`codes_A.json`) on A_eligible, structure, stage_at_signing, territory_cohort, max_rate_status. A contract can list several rules and carry adjudicated or patched atoms, so each count is an upper bound on that rule’s own effect. Rules that moved nothing are omitted. - ADJ-ROY-1 (10 contracts): A_eligible 3; structure 5; stage_at_signing 1. - ADJ-ROY-2 (35 contracts): A_eligible 9; structure 7; stage_at_signing 8; territory_cohort 3; max_rate_status 3. - ADJ-ROY-4 (24 contracts): A_eligible 3; structure 9; stage_at_signing 5; max_rate_status 3. - ADJ-ROY-5 (3 contracts): territory_cohort 1; max_rate_status 1. - ADJ-ROY-6 (20 contracts): A_eligible 2; structure 12; max_rate_status 1. - ADJ-ROY-7 (4 contracts): A_eligible 3; stage_at_signing 2; territory_cohort 3. - ADJ-ROY-8 (43 contracts): A_eligible 9; structure 4; stage_at_signing 16; territory_cohort 3; max_rate_status 3. - ADJ-ROY-9 (15 contracts): A_eligible 2; structure 7; stage_at_signing 3; territory_cohort 1; max_rate_status 6. - ADJ-ROY-10 (6 contracts): A_eligible 1; structure 2; stage_at_signing 1; max_rate_status 2. - ADJ-ROY-11 (2 contracts): structure 1. - ADJ-ROY-12 (4 contracts): A_eligible 2; stage_at_signing 1. - ADJ-ROY-13 (3 contracts): A_eligible 1; structure 2; stage_at_signing 1. - ADJ-ROY-15 (1 contract): structure 1. - ADJ-ROY-16 (2 contracts): structure 1. - ADJ-ROY-17 (1 contract): stage_at_signing 1. - ADJ-ROY-18 (3 contracts): structure 2; stage_at_signing 1; max_rate_status 1. - ADJ-ROY-20 (9 contracts): A_eligible 2; stage_at_signing 5. - ADJ-ROY-21 (2 contracts): territory_cohort 1; max_rate_status 1. - ADJ-ROY-22 (2 contracts): structure 1; max_rate_status 2. - ADJ-ROY-25 (18 contracts): A_eligible 1; structure 2; stage_at_signing 2; max_rate_status 1. - ADJ-ROY-26 (2 contracts): territory_cohort 1.

- R20-1 (Mark’s ruling, topic.json amendment 20; listed in 96 reads): subject NO in 23 contracts: Aphria-CharlottesWeb, AppliedBiology-Taisho, AprApplied-Eton, BioAdaptives-ThomasJ, CleneNanomedicine-4life, DatavaultAi-Scilex, Docklight-HighPark, Duo-LucyPet, Gelesis-CmsBridging, GlobalBioLife-Chemia,

GoodnessGrowth-GrownRogue, GskConsumer-Novartis-NeuroMetrix, LiftedLiquids-DiamondSupply, MarvEnterprises-PremierBiomedical-TechnologyHealth, Miromatrix-RepriseBiomedical, PathwayRx-SundialGrowers-IgorKovalchuk-OlgaKovalchuk-DarrylHudson, ReshapeLifesciences-BioradMedysis, SanofiUs-DarioHealth, Tauriga-ThinkBig, TikunOlam-JayPharma, TommyBahama-Boomer, TrailerPark-HemptownOrganics-HtNaturals, Universityof-Safecoat.

- R20-2 (restated-base date): checked in 25 reads (CORRECTED 3, UNCHANGED 22). Corrected: Factor-Novellus X 2015-02-06 / Y 2015-02-06 → 2020-03-16 (commenced before 2018: False); LomaLinda-ADiTx A None → 2011-05-25 (commenced before 2018: True); Nkmax-Nkgen A 2020-02-12 → 2021-10-14 (commenced before 2018: False).
- ADJ-ROY-28 (an upper bound printed as exclusive (post-R3; directed by Mark 2026-10-28 on R3-ROY-BUILD-01); a build rule, no read changes): exclusive bound printed in 3 cohort contracts (CrtPioneer-CentryPharma, Immune-TaiwanJ, Napo-NapoEu); EFR levels it moves: Immune-TaiwanJ_Intellectual-Property-License_2022-09-30 efr_500M.
- Lead patches (`analyze/lead_patches_royalty.json`, applied after adjudication; LEAD-ROY-1 and LEAD-ROY-2 are not ratified; LEAD-ROY-3 applies Mark's ruling of 2026-10-28 on R3-ROY-CODES-01): LEAD-ROY-1 (ADJ-ROY-12 applied uniformly) Biofirst-ForSeeConEye: duplicate_of → "Abvc-ForSeeConEye_Definitive-Licensing_2024-03-25"; LEAD-ROY-1 (ADJ-ROY-12 applied uniformly) Biolite-OncoX (2024-05-14): duplicate_of → "Abvc-OncoX_Definitive-Licensing_2024-05-14"; LEAD-ROY-1 (ADJ-ROY-12 applied uniformly) Biolite-OncoX (2024-05-23): duplicate_of → "Abvc-OncoX_Definitive-Licensing_2024-05-23"; LEAD-ROY-2 (ADJ-ROY-4 (a replacement rate is a rate on Net Sales); R-4 printed anomaly) Aum-Newsoara: schedule.structure → "TIERED", schedule.step_events → [], schedule.step_rates → [], rates_by_role.3.role → "REDUCTION_AMOUNT", printed_anomalies → ["5.2.1 'shall be reduced to fifty percent (50%)': read as 50% of the rate otherwise payable (a reduction cannot be to a rate above 10%); LEAD-ROY-2"]; LEAD-ROY-3 (R19-3 (Mark's ruling, topic.json amendment 19) applied as written; Mark 2026-10-28 on R3-ROY-CODES-01 (analyze/MARK_RULINGS_royalty_2026-10-28.json)) FabreKramer-Aytu: schedule.structure → "COMMERCIALIZATION_PAYMENT", rates_by_role.0.role → "COMMERCIALIZATION", rates_by_role.1.role → "COMMERCIALIZATION", rates_by_role.2.role → "COMMERCIALIZATION", rates_by_role.3.role → "COMMERCIALIZATION".
- related_party: true in 15 of 279 FINAL reads. Basis shapes: locator list 1, none (related_party not true) 264, not a locator list (dict) 1, not a locator list (none) 11, not a locator list (str) 2. Only a locator list is cut into `provisions.jsonl`. related_party basis not a locator list: dict (1): ZeusDiagnostics-Pointof; none (11): BoyalifeGenomics-ThermoGenesis, DocpharmaSingle-CosmosHealth, EgBioMed-YongDing (2024-06-25), EgBioMed-YongDing (2024-09-30), ImmunityBio-GlobeImmune, Napo-NapoEu, Nkmax-Nkgen, Oncotelic-Autotelic (2021-09-30), Oramed-Oravax, PrimeGen-PrimeGenUs, RespireRx-ResolutionRx; str (2): TheraCourPharma-NanoViricides (2019), TheraCourPharma-NanoViricides (2021).

3. A — EFR by stage at signing, beside II.C (unit: A-eligible contracts; denominator 116)

Each EFR / Max-rate column gives `average / median (n=k)` in percent of net sales over COMPUTED values only; k differs by column when a level is not computed. A column with k < 3 prints `n=k` only (R19-7). The II.C columns are II.C (2013–21 commenced, unredacted FOIA copies; LinkedIn), as `average / median`, from https://www.linkedin.com/pulse/global-vs-regional-alliances-mark-edwards-49p7c.

row	contracts	EFR $200M	EFR $500M	EFR $1B	Max rate	II.C n	II.C EFR $200M	II.C EFR $500M	II.C EFR $1B	II.C Max share
Disc & Lead	28	5.07 / 5.00 (n=25)	5.17 / 5.00 (n=25)	5.21 / 5.00 (n=25)	5.56 / 5.00 (n=24)	32	4.92 / 4.00	5.11 / 4.00	5.43 / 4.00	9.81 / 7.00
Preclinical	21	11.25 / 5.00 (n=14)	11.32 / 5.50 (n=14)	11.57 / 6.25 (n=14)	12.10 / 8.00 (n=15)	36	6.17 / 6.00	6.46 / 6.50	6.90 / 7.00	9.71 / 10.00
Phase I/II WW	22	7.97 / 7.00 (n=18)	8.47 / 7.25 (n=16)	8.53 / 7.50 (n=15)	8.56 / 7.50 (n=17)	31	8.51 / 7.00	8.83 / 8.10	9.29 / 8.55	12.82 / 12.00
Phase I/II Regional	3	n=2	n=2	n=2	6.83 / 7.50 (n=3)	16	9.70 / 8.00	10.37 / 8.20	10.78 / 9.25	12.23 / 10.00
Phase III WW	9	14.65 / 15.00 (n=5)	17.02 / 15.00 (n=5)	18.11 / 15.00 (n=5)	18.50 / 12.50 (n=4)	6	13.32 / 12.50	14.83 / 13.60	15.55 / 14.30	22.33 / 20.00
Phase III Regional	10	17.82 / 12.00 (n=7)	18.04 / 12.00 (n=7)	18.24 / 12.00 (n=7)	16.25 / 17.50 (n=4)	21	16.08 / 13.00	17.70 / 16.60	19.17 / 18.60	19.18 / 19.50
Approved / registration	20	11.17 / 11.50 (n=12)	11.24 / 11.50 (n=12)	11.39 / 11.50 (n=12)	13.78 / 13.50 (n=16)	—	—	—	—	—

- II.C has no row for: Approved / registration (— in the II.C columns). II.C row labels other than WW / Regional: Disc & Lead → 'Corp Excl'; Preclinical → 'Corp Excl';

verbatim from topic.json amendment 19 (R19-0): “Mark’s definitions resolve its open label questions: ‘Corp Excl’ = exclusive agreements involving corporate licensors; ‘Max Share’ / ‘Max rate’ = the highest royalty rate in the contract”

- Phase rows: WW = territory WW or WW_EXCEPT; Regional = REGIONAL. Disc & Lead, Preclinical and Approved / registration pool every territory. Phase-row contracts with territory UNRESOLVED are outside both cells: 3 of 116 A-eligible contracts (Phase I/II 3): Abvc-ForSeeConEye, Abvc-OncoX (2024-05-23), Akebia-Cyclerion.

Per cell: contracts, and the levels not COMPUTED by status (a level not COMPUTED never counts as a value): - **Disc & Lead** (28 contracts; territory REGIONAL 2, UNRESOLVED 1, WW 24, WW_EXCEPT 1): 3dGlobal-YongDing, Anew-Teleost, BlueWater-AbVacc, BoyalifeGenomics-ThermoGenesis, Celyad-HorizonDiscovery (2018-04-03), Celyad-HorizonDiscovery (2018-06-27), Cytoarm-SlLink, Diverse-Enveric, EliLilly-TRexBio-TRex, Factor-Novellus, Foghorn-EliLilly, GTech-Enochian-GHealth (2020), GTech-Enochian-GHealth (2021), KainosMedicine-EmmausLife, Kcl-OncologyPharma, KinetaChronic-Genentech, NasusPharma-FormulexPharma, NeoIndicate-RadiopharmTheranostics, NeurodynLife-AlphaCognition, Oncotelic-AutotelicBio, OsTherapies-BlinkBio, ProPhase-GlobalBioLife (2022-07-18), Regen-OncologyPharma, Sanofi-Opiant, Skinvisible-Quoin, Sybleu-OncologyPharma, Taurus-Minotaur, Voyager-Neurocrine. Not computed — EFR $200M: UNMEASURED:REDACTED 3; EFR $500M: UNMEASURED:REDACTED 3; EFR $1B: UNMEASURED:REDACTED 3; Max rate: UNMEASURED:REDACTED 4. - **Preclinical** (21 contracts; territory REGIONAL 7, UNRESOLVED 1, WW 12, WW_EXCEPT 1): AbMed-AbproBio, AbPro-AbproBio, Abvc-OncoX (2024-04-16), AdverumBiotechnologies-Lexeo, Akos-Aries, Anji-LipimetiXDevelopment, CrtPioneer-CentryPharma, IglPharma-Qsam, Impetis-Vyome, Miralogx-Mira, Nanoviricides-MS, Oramed-Oravax, Orchard-Pharming, ReJoy-JupiterWellness, Rexahn-ZhejiangHaichang, Rgene-OncoX (2024-05-08), Sonnet-NewLife, Tay-Vyne, TheraCourPharma-NanoViricides (2019), TheraCourPharma-NanoViricides (2021), UroGenPharma-Agenus. Not computed — EFR $200M: UNMEASURED:APPLICATION_UNCLEAR 3, UNMEASURED:BASIS_OTHER 1, UNMEASURED:REDACTED 3; EFR $500M: UNMEASURED:APPLICATION_UNCLEAR 3, UNMEASURED:BASIS_OTHER 1, UNMEASURED:REDACTED 3; EFR $1B: UNMEASURED:APPLICATION_UNCLEAR 3, UNMEASURED:BASIS_OTHER 1, UNMEASURED:REDACTED 3; Max rate: UNMEASURED:REDACTED 6. - **Phase I/II WW** (22 contracts; territory WW 13, WW_EXCEPT 9): AdvancedCancer-Qualigen, Advaxis-OsTherapies, BioLite-AiBtl, Cmg-Handok-Aum, GSK-iTeosBelgium, Gpcr-Exicure, Igf-Lirum, Immune-TaiwanJ, ImmunityBio-GlobeImmune, IndiviorUk-AelisFarma, Janssen-MeiragtxUk-Meiragtx, MannKind-United, MerckKGaA-Pds, Metuchen-Hybrid, Nkmax-Nkgen, Oncotelic-Autotelic (2021-09-30), Pfizer-ValnevaAustria, Processa-OcuphirePharma, Processa-Yuhan, Pulmatrix-SensoryCloud, TrigonePharma-Relmada, Vernalis-Anebulo. Not computed — EFR $200M: NOT_APPLICABLE:CUMULATIVE_BASIS 1, UNMEASURED:REDACTED 3; EFR $500M: NOT_APPLICABLE:CUMULATIVE_BASIS 1, UNMEASURED:APPLICATION_UNCLEAR 2, UNMEASURED:REDACTED 3; EFR $1B: NOT_APPLICABLE:CUMULATIVE_BASIS 1, UNMEASURED:APPLICATION_UNCLEAR 3, UNMEASURED:REDACTED 3; Max rate: UNMEASURED:REDACTED 5. - **Phase I/II Regional** (3 contracts; territory REGIONAL 3): Abvc-AiBtl, Cortice-Cns, vTv-CognaTechnology. Not

computed — EFR $200M: NOT_APPLICABLE:CUMULATIVE_BASIS 1; EFR $500M: NOT_APPLICABLE:CUMULATIVE_BASIS 1; EFR $1B: NOT_APPLICABLE:CUMULATIVE_BASIS 1; Max rate: none. - **Phase III WW** (9 contracts; territory WW 6, WW_EXCEPT 3): Abeona-Ultragenyx, Acer-Relief (2021-03-19), AnaptysBio-Vanda, AngionBiomedica-Vifor, Novartis-MolecularPartners, Processa-Elion, Takeda-Arrowhead, Takeda-Protagonist, ZymeworksBc-Jazz. Not computed — EFR $200M: UNMEASURED:APPLICATION_UNCLEAR 1, UNMEASURED:REDACTED 3; EFR $500M: UNMEASURED:APPLICATION_UNCLEAR 1, UNMEASURED:REDACTED 3; EFR $1B: UNMEASURED:APPLICATION_UNCLEAR 1, UNMEASURED:REDACTED 3; Max rate: UNMEASURED:REDACTED 5. - **Phase III Regional** (10 contracts; territory REGIONAL 10): Angionetics-ShanxiTaxus, Applied-MercuryPharma, Astria-Kaken, Baylor-BellerophonPulse-Bellerophon, ColdGenesys-Lepu, DaiichiSankyo-Esperion (2019), Ocugen-Kwangdong, Orphan-Vifor-Travere, SesenBio-ViventiaBio-Qilu, Vyera-CytoDyn. Not computed — EFR $200M: UNMEASURED:REDACTED 3; EFR $500M: UNMEASURED:REDACTED 3; EFR $1B: UNMEASURED:REDACTED 3; Max rate: UNMEASURED:REDACTED 6. - **Approved / registration** (20 contracts; territory REGIONAL 14, WW 1, WW_EXCEPT 5): AMMTeK-Eton, Akebia-MediceArzneimittel, AppliedBiology-JupiterWellness, BioLineRx-AyrmidPharma, ClearsideBiomedical-ArcticVision, GenomicsInnovations-Centogene, Itonis-CaringBrands, Ligand-AthiraPharma, Ligand-Lnhc, Lipocine-AntaresPharma, Lipocine-GordonSilver, Lipoxen-PublicJoint, Napo-NapoEu, Otsuka-Esperion, Paion-PaionDeutschland-LaJolla-Tetraphase, PharmaMar-Jazz, PierreFabre-Eton, Point-LantheusThree-Lantheus-LantheusTwo, Sanofi-Regeneron, ShanghaiJunshi-Coherus. Not computed — EFR $200M: UNMEASURED:APPLICATION_UNCLEAR 1, UNMEASURED:REDACTED 7; EFR $500M: UNMEASURED:APPLICATION_UNCLEAR 1, UNMEASURED:REDACTED 7; EFR $1B: UNMEASURED:APPLICATION_UNCLEAR 1, UNMEASURED:REDACTED 7; Max rate: UNMEASURED:REDACTED 4.

Sensitivities (each recomputed from the FINAL codes; same format as the table): - WW only (territory WW, WW_EXCEPT removed), Phase WW rows: Phase I/II WW: 13 contracts (9 WW_EXCEPT removed), EFR $200M 9.56 / 10.00 (n=9), EFR $500M 9.67 / 10.00 (n=9), EFR $1B 9.94 / 9.25 (n=8), Max rate 10.00 / 10.00 (n=8); Phase III WW: 6 contracts (3 WW_EXCEPT removed), EFR $200M 13.67 / 10.00 (n=3), EFR $500M 13.67 / 10.00 (n=3), EFR $1B 13.67 / 10.00 (n=3), Max rate n=2. - Without related-party contracts (8 in the cells: BoyalifeGenomics-ThermoGenesis, ImmunityBio-GlobeImmune, Napo-NapoEu, Nkmax-Nkgen, Oncotelic-Autotelic (2021-09-30), Oramed-Oravax, TheraCourPharma-NanoViricides (2019), TheraCourPharma-NanoViricides (2021)); rows that lose a contract: Disc & Lead: 27 contracts, EFR $200M 4.97 / 5.00 (n=24), EFR $500M 5.07 / 5.00 (n=24), EFR $1B 5.12 / 5.00 (n=24), Max rate 5.48 / 5.00 (n=23); Preclinical: 18 contracts, EFR $200M 10.91 / 5.00 (n=11), EFR $500M 11.00 / 5.00 (n=11), EFR $1B 11.32 / 5.00 (n=11), Max rate 12.00 / 6.50 (n=12); Phase I/II WW: 19 contracts, EFR $200M 7.50 / 7.00 (n=15), EFR $500M 8.04 / 7.00 (n=13), EFR $1B 8.23 / 7.50 (n=13), Max rate 7.89 / 7.25 (n=14); Approved / registration: 19 contracts, EFR $200M 10.95 / 10.00 (n=11), EFR $500M 10.95 / 10.00 (n=11), EFR $1B 10.95 / 10.00 (n=11), Max rate 13.50 / 13.00 (n=15). - USD-only (EFR is computed at nominal levels in each schedule's own currency, no FX; schedules not in USD counted per cell): Disc & Lead: NOT_STATED 1, TWD 1 → USD-only 26 contracts,

EFR $200M 4.68 / 5.00 (n=23), EFR $500M 4.79 / 5.00 (n=23), EFR $1B 4.84 / 5.00 (n=23), Max rate 5.20 / 5.00 (n=22); Preclinical: NOT_STATED 1 → USD-only 20 contracts, EFR $200M 6.73 / 5.00 (n=13), EFR $500M 6.81 / 5.00 (n=13), EFR $1B 7.08 / 5.00 (n=13), Max rate 7.96 / 7.75 (n=14); Phase I/II WW: all USD; Phase I/II Regional: all USD; Phase III WW: all USD; Phase III Regional: EUR 1 → USD-only 9 contracts, EFR $200M 17.46 / 9.50 (n=6), EFR $500M 17.72 / 9.65 (n=6), EFR $1B 17.94 / 10.32 (n=6), Max rate 16.25 / 17.50 (n=4); Approved / registration: EUR 1, JPY 1, NOT_STATED 1, SAR 1 → USD-only 16 contracts, EFR $200M 12.15 / 13.25 (n=10), EFR $500M 12.24 / 13.50 (n=10), EFR $1B 12.42 / 13.50 (n=10), Max rate 14.86 / 14.50 (n=14). - Structure per cell (R19-8: FLAT and STEPPED_BY_EVENT enter as a constant EFR at the pre-event base rate; flat-rate n = FLAT + STEPPED_BY_EVENT, tiered n = TIERED + TIERED_AND_STEPPED): Disc & Lead: flat-rate 23, tiered 5 (FLAT 18, STEPPED_BY_EVENT 5, TIERED 4, TIERED_AND_STEPPED 1); Preclinical: flat-rate 13, tiered 8 (FLAT 12, STEPPED_BY_EVENT 1, TIERED 8); Phase I/II WW: flat-rate 13, tiered 9 (FLAT 10, STEPPED_BY_EVENT 3, TIERED 8, TIERED_AND_STEPPED 1); Phase I/II Regional: flat-rate 2, tiered 1 (FLAT 2, TIERED_AND_STEPPED 1); Phase III WW: flat-rate 4, tiered 5 (FLAT 2, STEPPED_BY_EVENT 2, TIERED 5); Phase III Regional: flat-rate 6, tiered 4 (FLAT 2, STEPPED_BY_EVENT 4, TIERED 4); Approved / registration: flat-rate 11, tiered 9 (FLAT 8, STEPPED_BY_EVENT 3, TIERED 8, TIERED_AND_STEPPED 1). - Rates of 50% or more (tier, step or schedule rate on net sales) in A-eligible contracts: 2: Nanoviricides-MS 70% “70%” (rate_by_role:SCHEDULE/tier) [structure FLAT; currency NOT_STATED; related_party false; A row Preclinical]; Vyera-CytoDyn 50% “fifty percent (50%)” (rate_by_role:SCHEDULE/tier) [structure STEPPED_BY_EVENT; currency USD; related_party false; A row Phase III Regional]. - Sensitivity, without contracts carrying a rate of 50% or more (the table above is unchanged): Disc & Lead: unchanged; Preclinical: 20 contracts, EFR $200M 6.73 / 5.00 (n=13), EFR $500M 6.81 / 5.00 (n=13), EFR $1B 7.08 / 5.00 (n=13), Max rate 7.96 / 7.75 (n=14); Phase I/II WW: unchanged; Phase I/II Regional: unchanged; Phase III WW: unchanged; Phase III Regional: 9 contracts, EFR $200M 12.46 / 9.50 (n=6), EFR $500M 12.72 / 9.65 (n=6), EFR $1B 12.94 / 10.32 (n=6), Max rate 16.25 / 17.50 (n=4); Approved / registration: unchanged.

- Window, this cohort: agreements with a D1 (signing) date 2018-01-01 or later, as filed with the SEC with the rate printed (A-eligible D1 dates 2018-04-03 to 2026-03-15).
- Window, II.C: deals commenced 2013–2021 (reference file: “SEC-filed deals commenced between 2013-21 (FOIA-dependent data). Mark, 2026-10-26: predominantly agreements commenced 2017 or earlier.”).
- The two windows overlap in 2018 (8 of 116 A-eligible contracts carry a D1 year in that span; overlap as stated in the reference file: “Mark, 2026-10-28 (chat, with his draft edits article_24_draft_v3.pdf): in the next-to-last paragraph the only overlap between the two analyses is 2018 (not 2018-21). The article’s stated window (2013-21) is kept as stated; this field bounds the overlap with the Article 24 cohort.”); the comparison is not like-for-like.
- Disclosure selection: this cohort exists because the filers left a royalty rate in clear in the filed copy; agreements filed with every rate redacted, and agreements never filed, are not in it.

4. B — structures (unit: contracts; population 250 = 279 cohort contracts minus 23 subject NO minus 6 duplicates)

- Structure prevalence: FLAT 115 of 250 (46.0%); TIERED 56 of 250 (22.4%); STEPPED_BY_EVENT 43 of 250 (17.2%); COMMERCIALIZATION_PAYMENT 8 of 250 (3.2%); ALL_REDACTED 7 of 250 (2.8%); PROFIT_SHARE 7 of 250 (2.8%); TIERED_AND_STEPPED 7 of 250 (2.8%); OTHER 7 of 250 (2.8%).
- FLAT (115 contracts; schedule source LATER_INSTRUMENT_ONLY 3, ROOT 112): rates as printed, n=114; min 0.5, median 5, max 70; by rate 0.5% 1, 1% 4, 1.5% 7, 1.75% 1, 2% 10, 2.5% 3, 3% 13, 3.5% 3, 3.75% 1, 4% 8, 4.5% 1, 5% 21, 5.5% 1, 6% 3, 6.5% 1, 7% 3, 7.5% 3, 8% 6, 9% 1, 10% 11, 14% 1, 15% 7, 20% 2, 25% 1, 70% 1; rate under markers 1.
- STEPPED_BY_EVENT (43 contracts): base rate n=41; min 0.75, median 5, max 50; by rate 0.75% 1, 0.85% 1, 1% 1, 1.5% 1, 2% 4, 2.5% 1, 3% 4, 4% 5, 4.25% 1, 5% 4, 6% 1, 7% 2, 7.5% 1, 8% 1, 9% 1, 10% 2, 12% 2, 13% 2, 15% 2, 20% 2, 22% 1, 50% 1; base under markers 2. Post-event rates (43 contracts carry post-event rate entries): n=49; min 0.25, median 2, max 24; by rate 0.25% 1, 0.425% 1, 0.5% 7, 0.75% 2, 0.875% 1, 1% 5, 1.5% 5, 1.75% 2, 2% 4, 2.5% 2, 3% 4, 4% 2, 4.5% 1, 5% 1, 6% 1, 7.5% 1, 10.4% 1, 13% 1, 14% 1, 15% 1, 17% 1, 18% 1, 20% 2, 24% 1; post-event rates under markers 11. Step events (contracts can name several): PATENT_OR_VALID_CLAIM 31, PRODUCT_TYPE 8, GENERIC_ENTRY 4, OTHER 3, DATE_OR_TIME 3, INDICATION 1.
- TIERED (56 contracts): tiers per schedule 2 tiers 11, 3 tiers 21, 4 tiers 18, 5 tiers 3, 6 tiers 3; thresholds visible NONE 29, ALL 27.
- TIERED_AND_STEPPED (7 contracts): tiers per schedule 2 tiers 4, 3 tiers 3; thresholds visible ALL 5, NONE 2; step events PATENT_OR_VALID_CLAIM 5, GENERIC_ENTRY 2, OTHER 1, COUNTRY_OR_TERRITORY 1.
- COMMERCIALIZATION_PAYMENT (R19-3; listed apart, no EFR; 8 contracts): Acelrx-Tetraphase (“ten percent (10%)”); Acer-Relief (2023) (“ten percent (10%)”); Alvotechhf-AlvogenLux (“fifty percent (50%)”); BiofronteraPharma-Biofrontera (“5%”, “10%”, “12%”, “15%”, “18%”, “2%”, “[***] percent ([***]%)”); FabreKramer-Aytu (“twenty eight percent (28%)”, “thirty-nine percent (39%)”, “twenty-four and a half percent (24.5%)”, “thirty-five and a half percent (35.5%)”, “three percent (3.0%)”, “four percent (4.0%)”); PsyenceBiomed-FilamentHealth (“10%”); Quoin-Aft (“twenty percent (20%)”); Quoin-WinhealthInvestment (“[****]”, “[twenty percent (20%)]”).
- PROFIT_SHARE (R19-3; listed apart, no EFR; 7 contracts): Abpro-Celltrion (“fifty percent (50%)”); Aptevo-Niowave (no rate printed); Lannett-NorthSouth-HecPty (no rate printed); Lannett-SunshineLake (no rate printed); Onotelic-GoldenMountain (“fifty percent (50%)”); Pulmatrix-Cipla (no rate printed); Roche-Genentech-Regeneron (no rate printed).
- Other structure values (no EFR): ALL_REDACTED 7: Aquestive-AtnahsPharma, BaylorCollege-Kuur, IcahnSchool-RenalytixAi, KinetaChronic-UniversityOf, Neuren-Acadia, Pfizer-Akcea-Ionis, Purdue-Novosteo; OTHER 7: Exicure-Ipsen, NanyangTechnological-Nanyang, PapyrusTherapeutic-HealthtechWound, Pharmala-

JupiterNeurosciences, Point-LantheusTwo-Lantheus, PrimeGen-PrimeGenUs, VeronaPharma-LigandUk.

Structure by licensor type (contracts):

structure	ACADEMIC	CORPORATE	GOVERNMENT	INDIVIDUAL	MIXED	NONPROFIT_OTHER	UNRESOLVED	total
FLAT	17	85	2	2	1	7	1	115
TIERED	8	48	0	0	0	0	0	56
STEPPED_BY_EVENT	10	23	0	1	2	7	0	43
COMMERCIALIZATION_PAYMENT	0	8	0	0	0	0	0	8
ALL_REDACTED	4	3	0	0	0	0	0	7
PROFIT_SHARE	0	7	0	0	0	0	0	7
TIERED_AND_STEPPED	0	7	0	0	0	0	0	7
OTHER	1	6	0	0	0	0	0	7

- Max rate over the 250 B contracts (highest SCHEDULE / STEP_POST_EVENT rate, R19-9): computed n=187; min 0.5, median 5, max 70; by rate 0.5% 1, 0.75% 1, 1% 5, 1.5% 9, 1.75% 2, 2% 15, 2.5% 6, 3% 20, 3.5% 3, 3.75% 1, 4% 14, 4.1% 1, 4.25% 1, 4.5% 1, 5% 25, 5.5% 1, 6% 9, 6.5% 1, 7% 3, 7.5% 5, 8% 8, 9% 2, 10% 19, 11% 1, 12% 4, 13% 2, 14% 2, 15% 10, 17% 1, 18% 2, 20% 5, 23% 1, 24% 1, 25% 3, 40% 1, 70% 1; not computed UNMEASURED:REDACTED 43, NOT_APPLICABLE:COMMERCIALIZATION_PAYMENT 8, NOT_APPLICABLE:PROFIT_SHARE 7, UNMEASURED:NO_RATE_IN_I0 5.
- Add-on rates (ADJ-ROY-15) listed in 0 B contracts (none; in the whole cohort 1: PathwayRx-SundialGrowers-IgorKovalchuk-OlgaKovalchuk-DarrylHudson (A_first_fail subject_biopharma)); an add-on can make the payable maximum higher than the Max rate shown.
- Rates of 50% or more (tier, step or rate on net sales; roles SCHEDULE, STEP_POST_EVENT, COMMERCIALIZATION) in B: 5 contracts: Abpro-Celltrion 50% “fifty percent (50%)” (rate_by_role:COMMERCIALIZATION) [structure PROFIT_SHARE; currency USD; related_party false; not in A]; Alvotechhf-AlvogenLux 50% “fifty percent (50%)” (rate_by_role:COMMERCIALIZATION/tier) [structure COMMERCIALIZATION_PAYMENT; currency USD; related_party false; not in A]; Nanoviricides-MS 70% “70%” (rate_by_role:SCHEDULE/tier) [structure FLAT; currency NOT_STATED; related_party false; A row Preclinical]; Onotelic-GoldenMountain 50% “fifty percent (50%)” (tier) [structure PROFIT_SHARE; currency USD; related_party false; not in A]; Vyera-CytoDyn 50% “fifty percent (50%)” (rate_by_role:SCHEDULE/tier) [structure STEPPED_BY_EVENT; currency USD; related_party false; A row Phase III Regional]. Values of 50% or more in other

rate roles (not rates on net sales; counted, not flagged): CAP 2, FLOOR 8, OTHER 10, REDUCTION_AMOUNT 58, SUBLICENSE_INCOME_SHARE 19.

5. C — disclosure frequency

Unit: documents in the frame and alliances (`topics/royalty_rates/analyze/c_result.json` and its companions, written by `scripts/analyze_royalty_c.py`). The estimated redacted alliances and the disclosure share carry 95% intervals; every other value below is a count or a point estimate marked as such, and none is a floor. Filed 2020 or later is read from the accession number's year field (accession-year proxy for the filing year).

quantity	value
frame documents	1553
sample documents	300
verified members in the sample	257
members on the IN side	4
estimated redacted alliances	920.5 (95% interval 854.3–986.2)
IN-side alliances	336
disclosure share	0.2674 (95% interval 0.2541–0.2823)
redacted alliances with thresholds visible (estimate)	14.7
IN-side alliances with thresholds visible	32
bootstrap resamples / seed	10000 / 20261026
member documents in the grouping file	257
grouping members on the IN side	4
distinct alliances in the grouping file	237
c_in_side: n_in_side_contracts_listed	395
c_in_side: n_in_side_from_cohort	222
c_in_side: n_in_side_outside_cohort_single_reader	114
c_in_side: thresholds_measured_on	"cohort part only (n=222); thresholds_visible ALL/SOME counted"
c_in_side: cohort_thresholds_visible_values	{"NA": 155, "ALL": 32, "NONE": 35}
c_in_side: disposition_counts	{"IN / A/B FINAL": 222, "IN / single IN-side reader": 114, "out:class / A/B FINAL": 20, "out:class / single IN-side reader": 5, "out:duplicate / A/B FINAL": 6, "out:profit_share / A/B FINAL": 6, "out:subject / A/B FINAL": 17, "out:subject / single IN-side reader": 5}

- Frame (verbatim from `inventory_C.json`): “C frame: candidate redacted documents (accession year 2020+) = OUT(r) rows + mechanical REDACTED_ONLY rows. Documents, NOT alliances. Accession year is a proxy for filing year on screening rows.” OUT(r) rows filed 2020+: 790; mechanical REDACTED_ONLY rows filed 2020+: 763; frame documents: 1553.

- IN-side alliances are listed by contract id in `topics/royalty_rates/analyze/c_in_side.json` (336 ids). They include 9 of the 10 contracts with a NOT_PRINTED D1 date (C needs a filing year, not a signing date): Hadasit-CellCure_Amended-and-Restated-Research-and-License_XXXX-XX-XX, JohnsHopkins-BullfrogAl_License_XXXX-XX-XX, Nls1-EurofarmaLaboratorios_License-and-Development_XXXX-XX-XX, PropancPty-UniversityOf_Commercialiation_XXXX-XX-XX, SciSparc-Polyrizon_Exclusive-Patent-License_XXXX-XX-XX, SiloPharma-AikidoPharma_Patent-License_XXXX-XX-XX, UniversityCourt-NuvectisPharma_Licence_XXXX-XX-XX, Universityof-OrphazymeApS_University-of-Miami-Exclusive-License_XXXX-XX-XX, Universityof-Zolovax_Exclusive-License_XXXX-XX-XX.

- The 95% intervals reflect sampling of the 300 documents only. They do not include grouping error, single-reader coding or the frame’s undercount; the direction of each is stated below, or stated as unknown.

- Grouping (verbatim from c_result.json): “m_d counts frame documents found by the reader’s two party tokens and confirmed by a reviewer; a refiling the tokens miss leaves m_d too small, which raises N_hat and lowers the share (direction stated).”

- The codebook gives grouping to the lead. The lead delegated the reading of candidate documents to grouping reviewers under analyze/C_GROUPING_BRIEF_ROYALTY.md and spot-checked their decisions. Where two reviewers’ links placed a member in different groups, the alliance is the connected component of their links (lead rule LEAD-ROY-C1, written after the decisions were visible; not ratified). It decided 2 members (0000874015-25-000089:exhibit10-58.htm, 0000950123-24-003803:filename13.htm): in one, the two groups were nested groups for one alliance; in the other, two agreements joined by one omnibus amendment were merged, against the reading of the member’s own reviewer (R3-ROY-C-05).

- Sampled documents that are not verified members, by first failing test: eligible_biopharma not YES 25, class not LICENCE/COLLABORATION/OPTION 16, excluded_kind 1, royalty_on_net_sales not YES 1.

- Estimated redacted alliances by the accession year of the sampled document (point estimates, no interval; an alliance filed in several years is split by its documents’ weights): 2020 163.1, 2021 269.2, 2022 119.1, 2023 136.2, 2024 63.4, 2025 108.3, 2026 61.3.

- Sales-tier thresholds printed: 32 of the 222 IN-side alliances in the A/B cohort (thresholds_visible ALL or SOME; measured on the cohort part only), against an estimated 14.7 of the estimated 920.5 redacted alliances (point estimate).
- Bootstrap: percentile over the 300 sampled documents. Documents per alliance (m_d: distinct alliances in the grouping file): 1: 126, 2: 77, 3: 23, 4: 9, 5: 1, 6: 1; by member document: 1: 126, 2: 82, 3: 30, 4: 13, 5: 2, 6: 4.
- IN-side alliances outside the A/B cohort were coded for alliance class and the R20-1 subject test by one reader (single-reader coding).
- Direction, frame undercount (two parts): royalty clauses written under markers with no %/percent token anywhere in the exhibit are missed on the redacted side only, so the redacted population is understated and the measured share is too high; documents outside the search legs are missed on both sides (the IN side is found through the same legs), so their net direction is unknown. These two lines replace c_result.json's single direction sentence (R3-ROY-C-01).
- Direction unknown: the single-reader coding of the 114 IN-side alliances outside the cohort; and the single C reads of 225 of the 300 sampled documents, for which the 75-document second read is the measured evidence (1 with any disagreement) (R3-ROY-C-02).
- Further error sources named by the R3-ROY review and left unapplied by Mark's ruling of 2026-10-28; effects as computed by the reviewer, not re-derived here:
  - R3-ROY-C-03: Six held contract records print a royalty rate on net sales in exhibits filed 2023 or 2025 and are left off the IN side, so the IN side is too small and the share too low; counting them, the reviewer computes 0.2709.
  - R3-ROY-C-04: Eight sampled documents with eligible_biopharma UNRESOLVED (some only because the field is redacted) count as non-members, so N_hat is too low and the share too high; counting all of them as members, the reviewer computes N_hat 956.7 and share 0.2599.
  - R3-ROY-C-06: An IN-side alliance shows a rate if any filed version shows one: 11 of the 336 show a rate only in filings made before 2020, so the share of alliances showing a rate in a 2020+ filing is lower; the reviewer computes about 0.261.
  - R3-ROY-ARTICLE-03: The IN side counts any visible rate (include test (c)), while the redacted side applies the C reader brief's stricter rule (a reduction 'by X%' does not count); 14 of the 222 cohort IN-side contracts show no rate in their representative schedule, so the share may be too high; if 4 to 14 move, the reviewer computes 0.264 down to 0.256.

Second read (75 documents read by both C readers; 1 with any disagreement):

atom	agree / n	kappa
eligible_biopharma	75/75	1.0

atom	agree / n	kappa
instrument_class	74/75	0.972
is_amendment	75/75	1.0
royalty_on_net_sales	75/75	1.0
excluded_kind	75/75	1.0
rate_visibility	75/75	1.0
thresholds_visible	75/75	1.0
verified_member	75/75	1.0

6. Limits

- Visible text of SEC-filed exhibits only; agreements never filed are not in the cohort.
- A redaction is not an absence: a level or rate under markers is reported as not computed, never estimated or filled.
- KC (claim-strength) scoring was not used; nothing in this report asserts the strength of any patent claim.
- II.C comparison, bases: II.C counts SEC-filed deals (FOIA-dependent data) commenced 2013–2021; this cohort counts agreements with a D1 date 2018 or later whose filed copy prints a rate. The two are not like-for-like.
- II.C comparison, overlap: the windows share only 2018 (as stated by Mark, 2026-10-28; II.C's stated window runs to 2021).
- No FX: each EFR is computed at nominal sales levels in its schedule's own currency.
- Offsets, royalty stacking and IRA cuts are not applied to any EFR (Article 23 covers IRA clauses).
- Stage sources from CT.gov are carried as reference (NCT id, quote, first-posted date), not re-fetched: 38 of the stage sources in A (stage source kinds in A: CONTRACT_TEXT 89, CTGOV 38, SEC_FILING 112).
- Single-reader codes: 53 contracts were read by reader A only; the RANDOM stratum's any-atom disagreement 9/18 (Wilson 95% 0.290–0.710) estimates their error.
- The 10 held contract records are out of every count. The 10 contracts with a NOT_PRINTED D1 date are out of A and B; 9 of them are on C's IN side (§5).
- 2018–19 recall limit (topic.json amendment 18 (5)): Find was not re-run over filings of 2018–2019, so a contract filed only then reaches the cohort only through the V rounds. 8 cohort contracts (3 A-eligible) have every version filed before 2020. The limit is UNMEASURED, never zero.

7. Review state

- Review ledger `analyze/R3_royalty/ledger.json`: 55 findings; severity MUST_FIX 7, NOTE 28, SHOULD_FIX 20; status CLOSED_BY_LEAD 15, CLOSED_BY_MARK 8, OPEN 32.
- Brief `analyze/R3_ROYALTY_BRIEF.md` (committed d36b64b4 before any reviewer ran); reviewer files in `analyze/R3_royalty/`.

- Mark's rulings: `analyze/MARK_RULINGS_royalty_2026-10-28.json`.
- CLOSED_BY_LEAD and CLOSED_BY_MARK closures were applied by the lead and have NOT been re-checked by a fresh reviewer.
- Closed on Mark's ruling (applied by the lead): R3-ROY-CODES-01, R3-ROY-BUILD-01, R3-ROY-BUILD-02, R3-ROY-C-01, R3-ROY-C-02, R3-ROY-ARTICLE-01, R3-ROY-ARTICLE-02, R3-ROY-ARTICLE-07.
- Closed by the lead: R3-ROY-BUILD-03, R3-ROY-BUILD-04, R3-ROY-BUILD-05, R3-ROY-BUILD-06, R3-ROY-BUILD-07, R3-ROY-C-05, R3-ROY-C-07, R3-ROY-C-09, R3-ROY-C-10, R3-ROY-C-11, R3-ROY-ARTICLE-04, R3-ROY-ARTICLE-05, R3-ROY-ARTICLE-06, R3-ROY-ARTICLE-08, R3-ROY-ARTICLE-09.
- Open SHOULD_FIX: R3-ROY-C-03, R3-ROY-C-04, R3-ROY-C-06, R3-ROY-ARTICLE-03.
- Open NOTE: R3-ROY-CODES-02, R3-ROY-CODES-03, R3-ROY-CODES-04, R3-ROY-CODES-05, R3-ROY-CODES-06, R3-ROY-CODES-07, R3-ROY-CODES-08, R3-ROY-BUILD-08, R3-ROY-BUILD-09, R3-ROY-BUILD-10, R3-ROY-BUILD-11, R3-ROY-BUILD-12, R3-ROY-C-08, R3-ROY-C-12, R3-ROY-C-13, R3-ROY-C-14, R3-ROY-C-15, R3-ROY-C-16, R3-ROY-ARTICLE-10, R3-ROY-ARTICLE-11, R3-ROY-ARTICLE-12, R3-ROY-ARTICLE-13, R3-ROY-ARTICLE-14, R3-ROY-ARTICLE-15, R3-ROY-ARTICLE-16, R3-ROY-ARTICLE-17, R3-ROY-ARTICLE-18, R3-ROY-ARTICLE-19.

Appendix A. Contracts excluded at the licensor-type step, by licensor type

- ACADEMIC (37): ArTara-Universityof, BaylorCollege-Kuur, Birad-ClearmindMedicine, BoardOf-Aditx, Boardof-RespireRx, EasternVirginia-Veralox, GeorgeWashington-BullFrogAi, GeorgetownUniversity-Shuttle, HeidelbergUniversity-Anew, IcahnSchool-RenalytixAi, JohnsHopkins-BullFrogAi, JohnsHopkins-BullfrogAI, JohnsHopkins-RumpusVeds, KinetaChronic-UniversityOf, LomaLinda-ADiTx, MonashUniversity-Zander, NanyangTechnological-Nanyang, NorthCarolina-Hoth, OxfordUniversity-BlueWater, Purdue-Novosteo, RegentsOf-YellowbrickBio, Regentsof-lnvizyne, RespireRx-ResolutionRx, RushUniversity-Somaryx, Sunshine-ArizonaBoard, TrusteesOf-SiloPharma, UniversityCollege-AmrytGenetics, UniversityOf-Provectus, Universityof-BlueWater, Universityof-BriaCell, Universityof-F3Platform, Universityof-Genprex, Universityof-NeOnc, Universityof-Qualigen, Yissum-ClearmindMed, Yissum-ClearmindMedicine (2022), Yissum-InnoCanPharma.
- GOVERNMENT (2): NationalInstitute-Lixte, US-NationalEye-Curative-Connectyx.
- INDIVIDUAL (2): DrCharles-DrPaolo-Relmada, Qrons-DrIdo-ProfessorsBenjamin.
- MIXED (2): UniversitatAutonoma-ConsorcioCentro-InstitucioCatalana-FundacioHospital-Anew, UniversitatAutonoma-InstitucioCatalana-Anew.
- NONPROFIT_OTHER (14): AlsTherapy-Anelixis, BlueWater-ChildrensHospital, CedarsSinai-Actcell, CedarsSinai-Enviro (2021), CedarsSinai-Enviro-KairosPharma, CedarsSinai-Stemvax, CedarsSlnai-KairosPharma-CedarsSinai, DanaFarber-X4, HLee-Lixte, MemorialSloan-AngioGenex, Scripps-SummitFor, StJude-BlueWater, Tufts-OkyoPharma, UniversityHealth-LucidPsycheceuticals.
- UNRESOLVED (1): NationalHealth-Applied.