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Feature

A statewide multi-institutional model that de-risks academic drug discovery

Suzanne Tomlinson-Mathis [1,*], the IDDD Core Network [†]

Texas has built a coordinated, multi-institution core network that de-risks academic discoveries while reducing redundant rebuilds across institutions. Through a distributed drug R&D model, autonomous cores collaborate via shared forums and referrals, making handoffs routine and providing industry-grade capabilities within academic settings. By preserving local expertise while enabling cross-core progression when data warrant, the network has delivered measurable outcomes: in a 2024 survey of ten cores, >750 projects entered at least one core, >70 traversed multiple cores, ~25 patents were filed, >60 startups launched and 15 programs reached the clinic; projects also attracted >US$186M in non-dilutive and >US$400M in dilutive capital. Together, these results demonstrate that collaboration at scale through a distributed core model can deliver meaningful translational impact.

Keywords: Academic drug discovery and development; multi-institutional core network; IND acceleration and de-risking; drug R&D infrastructure; commercialization mentor/advisor network; workforce training and education; Texas biotech ecosystem

FEATURE

Introduction: the risk gap in academic translation

Academic translation works best when infrastructure, capital and expert guidance operate as one system. Moving from a strong hypothesis to an Investigational New Drug (IND) requires validated assays, reliable analytics, pharmacokinetics/pharmacodynamics (PK/PD), toxicology, chemistry, manufacturing and controls (CMC), clear go/no-go decisions and experienced operators. When each lab tries to build all of this alone, timelines lengthen and costs and failures rise. Many successful models demonstrate portions of the solution. Stanford SPARK[(p1)] combines hands-on mentorship with catalytic funding. The National Center for Advancing Translational Sciences (NCATS) programs: Therapeutics for Rare and Neglected Diseases (TRND) and Blueprint Neurotherapeutics (BPN)[(p2)] use milestone-based development from hit-to-lead to first-in-human studies. The Tri-Institutional Therapeutics Discovery Institute (Tri-I TDI)[(p3)] connects three universities to a pharmaceutical partner and a defined venture path. The University of California Drug Discovery Consortium (UC DDC)[(p4)] gives cross-campus seed funding and shared tools. These show how structured pipelines move innovations; but most are single-institution, single-city or single-disease.

The Gulf Coast Consortia (GCC) Innovative Drug Discovery and Development (IDDD) consortium in Texas assembles a distributed multi-institutional network that coordinates autonomous cores to deliver similar end-to-end benefits at regional scale. Cores collaborate through shared forums, referrals and commercialization partners, as well as coordinated educational programs to develop a biotech commercialization workforce. Building infrastructure across collaborating institutions has resulted in a core network that provides industry-grade drug R&D resources within academic settings, fostering creativity without industrial rigidity or academic silos. The result is a practical

1359-6446/
https://doi.org/10.1016/j.drudis.2026.104685

way to de-risk projects and conserve capital.

Consortia architecture and collaboration

GCC IDDD, formed in 2003, connects multiple institutions in Houston and collaborators across Texas who are engaged in healthcare innovation R&D. It is anchored in the Texas Medical Center (TMC), widely recognized as the largest medical complex in the world and housed under the GCC where member institutions link through memoranda of understanding (MOUs) for shared instrumentation and aligned expectations for access and cost recovery. Each core is financed independently and maintains its own stage-gates and standard operating procedures (SOPs). Project management is Principal Investigator (PI)-led (with the active core team); GCC Research Evaluation and Commercialization Hub (GCC-REACH) adds milestone-based governance for funded projects. Quality and compliance are managed at the core level, often by teams with prior industry drug development experience, with directors sharing best practices through regular communication. Coordination occurs through shared venues, including the GCC IDDD Steering Committee and its annual conference, and through commercialization partners described below. The Steering Committee has no centralized spending authority beyond coordinating shared activities and inviting voluntary cost-sharing. The network reduces redundancy by avoiding duplicative buildouts and enables efficient referrals to the next core.

How the network is built

We operate as a collaborative network rather than a single center; cores retain autonomy but commit to regular director-to-director communication, coordinated referrals and shared activities. Participation emphasizes quality, transparency and active collaboration, with many cores engaging the IDDD Steering Committee to align priorities and accelerate handoffs. New cores can join if they are Texas-based academic drug and/or device units that agree to active collaboration as outlined above. The concentration of cores in Houston shortens the distance between ideas and decisive experiments: >75% of the network's capabilities sit within one metro area, which accelerates handoffs. Cores in San Antonio and Austin are essential partners, contributing distinctive strengths and exchanging referrals.

Individual cores (Figure 1) were primarily established through competitive Core Facility Support Awards (CFSAs) from the Cancer Prevention and Research Institute of Texas (CPRIT).[p5] Core establishment budgets are driven by the CPRIT CFSA caps, which shifted from US$6M (pre-2021) to US$4M (2021–2023) and US$3M (2024–present), with renewals currently up to US$2M. Across the ten surveyed cores, cumulative CFSA awards total ~US $57.3M, providing a conservative denominator for the outcomes reported. Modeled after CPRIT, The Dementia Prevention and Research Institute of Texas (DPRIT),[p6] approved by Texas voters on 4 November 2025, authorizes an additional US$3B in state funding for dementia research in Texas. Once operational, DPRIT will broaden Texas's translational capacity into

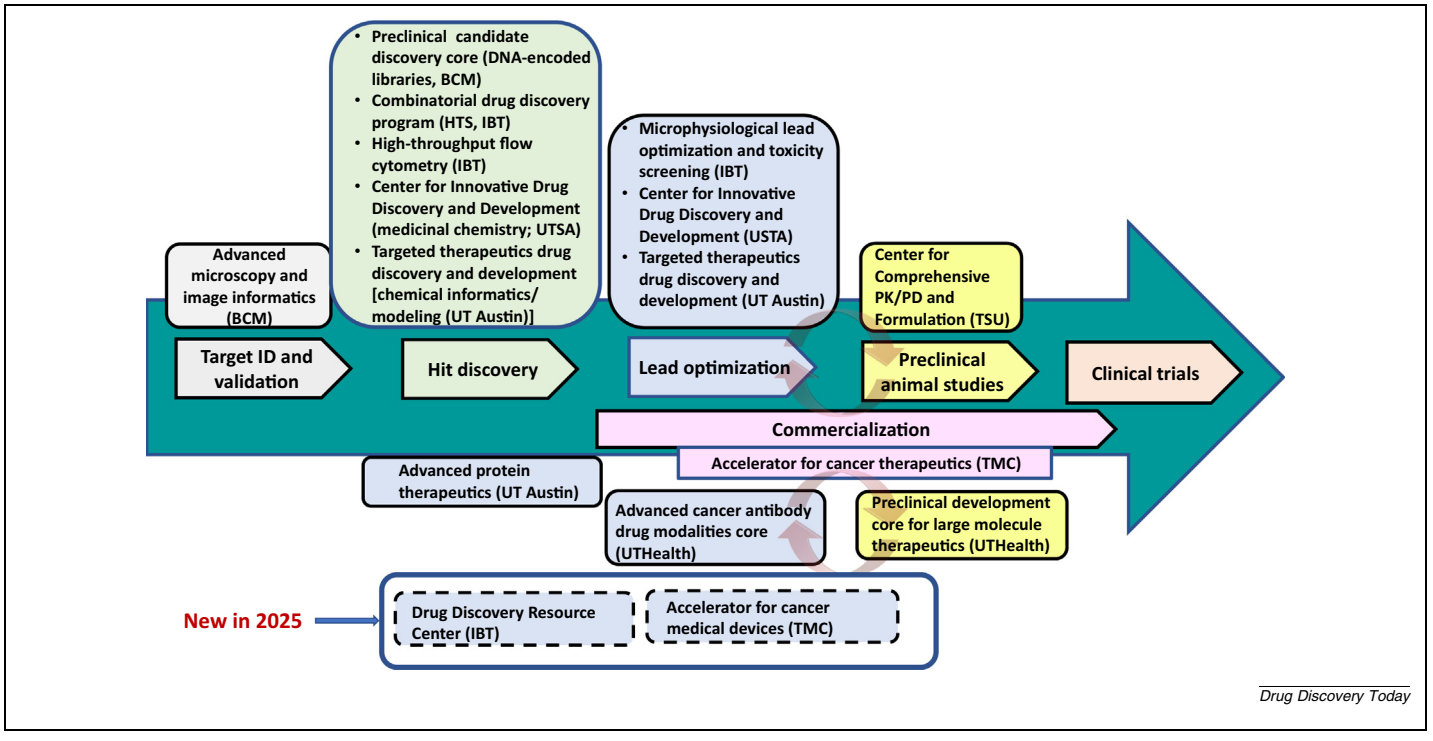

FIGURE 1

Multi-institutional core network. Cores from multiple Texas institutions along with a large network of advisors participate in the network. Current participating cores primarily support early discovery through preclinical studies with advisors providing support for clinical trial planning. Abbreviations: BCM, Baylor College of Medicine; HTS, high-throughput screening; IBT, Institute of Biosciences and Technology at Texas A&M Health; UTSA, University of Texas San Antonio; UT, University of Texas; TSU, Texas Southern University; UT Health, University of Texas Health Science Center, Houston; TMC, Texas Medical Center.

neurodegeneration, complementing CPRIT and strengthening the statewide pipeline from discovery to clinic.

A practical note on cost and compliance

Many have relied on reputable, less-expensive overseas contract research organizations (CROs) for medicinal chemistry, PK/PD and formulation. Today, that approach can jeopardize federal grant proposals, because some overseas arrangements are now flagged as potential foreign risk. The suite of in-state cores offers a cost-competitive, compliant option for early de-risking and optimization.

Capabilities at scale: multiple cores

Although Figure 1 shows all the cores that collaborate through the network, the nine technology cores shown in Figure 2, along with ACT (see below), reflect the units participating in the survey and original funding dates. Note that components summarized in each of the core descriptions are housed within and funded by that particular core.

Commercialization cores

Accelerator for Cancer Therapeutics (ACT; 2019) at TMC Innovation is a commercialization accelerator for oncology therapeutics that runs a cohort-based program with experienced full-time entrepreneurs-in-residence (EIRs). Many projects enter ACT from other cores. ACT then aligns milestones with market and regulatory expectations. Typical handoffs: inbound from CDDP, CIDD, MLOTS and the ADMC; outbound back to the cores for targeted proof-of-concept (POC) experiments.

GCC Research Evaluation and Commercialization Hub (GCC-REACH; 2023) is the newest NIH-funded member of the IDDD core network (not included in the survey). This resource leverages an extensive commercialization expert network to provide strategic advisory guidance for commercialization plan development. GCC-REACH partners with institutional technology transfer offices (TTO) across Texas to provide developmental milestone funding for early de-risking of academic technologies. Disease- and technology-agnostic, GCC-REACH has supported 74 projects led by >100 academics. These projects were led by teams from 15 Texas academic institutions and nine early-stage startup companies statewide. In addition to hundreds of academic users, >100 small-to-medium-sized biotech companies in Texas draw on these cores. Project leadership resides with the PI**,** supported by the Core Director and staff for study design, rigor and go/no-go decisions. As needed, teams draw on network mentor/advisor resources (e.g., ACT, GCC-REACH), where EIRs act as project champions to coordinate expert guidance and next steps.

Capacity, prioritization and fee structure

Each core posts its own application procedures, and available capacity fluctuates. Because most cores receive CPRIT support, cancer projects are prioritized and typically subsidized to a greater extent than non-cancer projects (Figure 3). In general, competing proposals are selected based on technical merit, scientific feasibility, unmet need and current capacity. Non-cancer projects are evaluated using the same criteria and proceed as capacity permits. Consistent with CPRIT CFSA expectations, cores provide statewide access to meritorious projects from Texas academic institutions and Texas-based companies, including users from institutions that do not operate a core in the network. Fee schedules are core-specific; most apply higher rates for industry users yet typically remain below commercial CRO pricing for comparable work (e.g., CCPF is ~50% lower than CROs), with CPRIT-subsidized cancer projects charged at lower rates.

Intellectual property (IP)

Each core maintains its own IP policy, and most operate fee-for-service without taking ownership in a user's IP. When a project requires intellectual contribution from core experts (e.g., co-development), cores can offer collaborative agreements with defined inventorship and rights. In all cases, IP expectations are clarified in advance and documented between the core and the PI (and their institutions). For joint development, terms are negotiated before the project start date among the core and the user's institution. Long-term sustainability relies on a diversified mix of institutional support, user-fee revenue and follow-on grants (with cores budgeted on collaborative proposals), with royalties from licensed, collaboratively developed IP expected to contribute over time.

Outcomes and impact

A 2024 survey of ten cores reporting cumulative totals since their inception (Figure 2) found that >750 projects entered at least one core, >70 traversed multiple cores, ~25 patents were filed, >60 startups launched and 15 technologies reached the clinic. The low proportion of multi-core projects is because many entries are early-stage efforts resulting in 'no-go', whereas only strong signals merit cross-core progression. Outcomes were compiled from each core's internal tracking through the survey cut-off: 'at least one core' reflects projects served within individual cores, whereas 'multiple cores' reflects cross-core handoffs. Patent counts reflect inventions that core directors indicated were enabled by use of these resources; we did not compare patenting rates to projects that did not use the network. Note that these are internally compiled, core-reported data and could be subject to reporting bias and incomplete harmonization across institutions.

Capital raised

The cross-core portfolio encompasses programs that have progressed to first-in-human studies and company launches across multiple therapeutic areas. Projects supported by the network have attracted >US$186M in non-dilutive capital and >US$400M in dilutive capital. Notably, at least one company that progressed through technical and commercialization cores was recently (post survey) acquired by a large pharmaceutical company for US$300M, bringing the total to just under US$1B.[p7]

Regional momentum

Investors and strategic partners are paying more attention to Houston and the broader Texas corridor. Examples include multi-million-dollar research R&D real estate investments[p8] and Eli Lilly's recent announcement to invest US$6.5B in a new pharmaceutical manufacturing facility in Houston.[p9] Costs are favorable compared with those on the East and West coasts.[p10],[p11] The TMC supports large clinical programs. Public co-investment

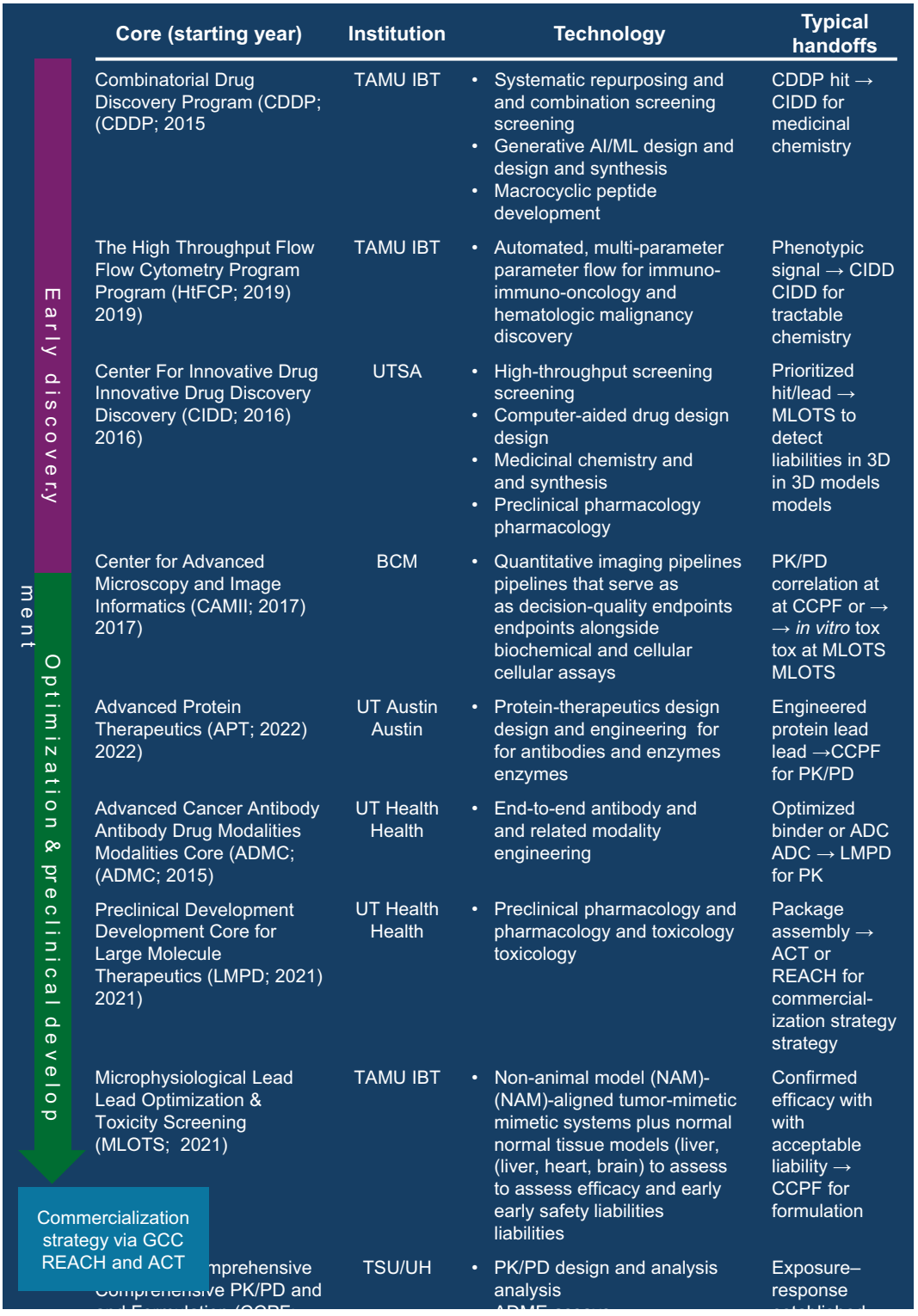

FIGURE 2

Cores summary. The nine technology cores that participated in the survey; years specify original funding date, with the earliest two cores reporting from 2015, and others from their original start date. Institutional abbreviations: Texas A&M Institute of Biosciences and Technology (TAMU IBT), University of Texas San Antonio (UTSA), Baylor College of Medicine (BCM), University of Texas Austin (UT Austin), University of Texas Health Science Center (UT Health), Texas Southern University (TSU), University of Houston (UH).

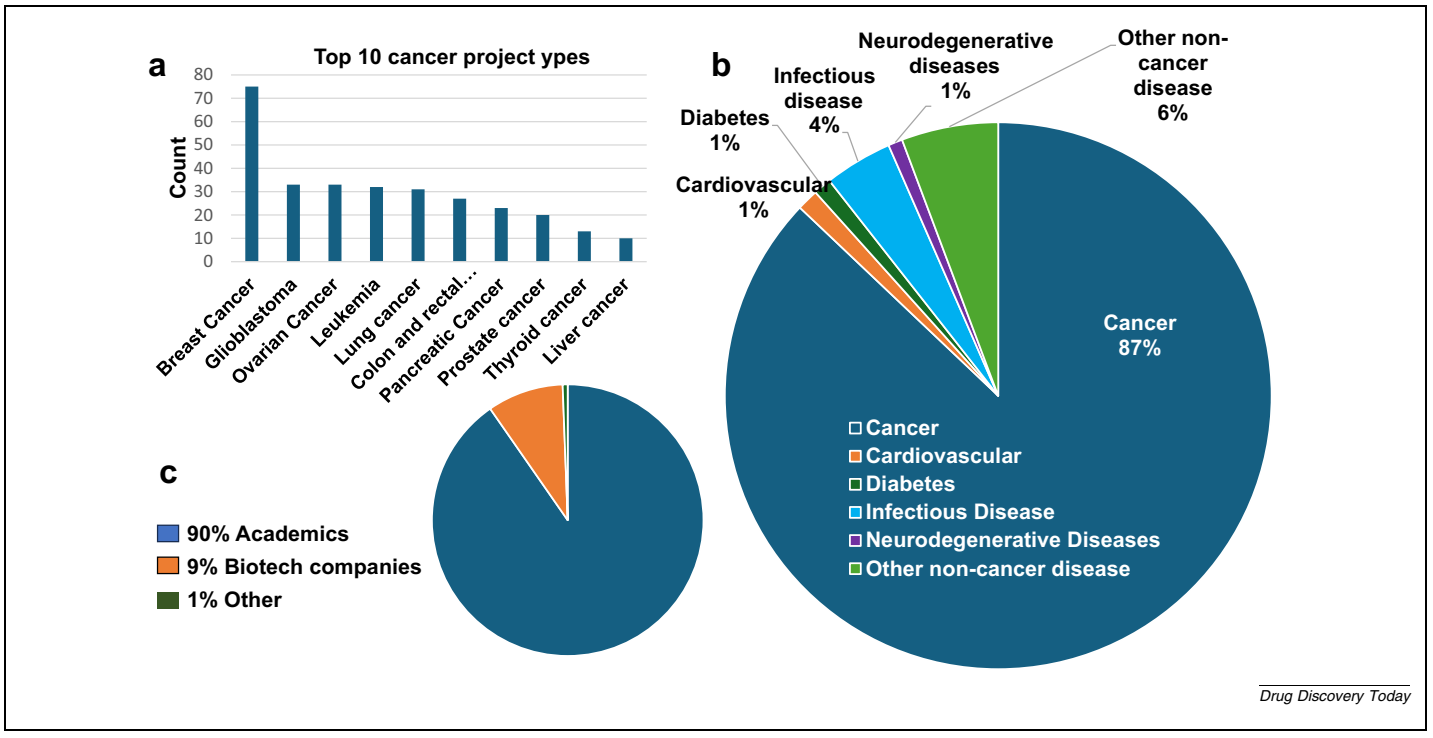

FIGURE 3

Summary of core network projects. **(a)** Counts of cancer project types. **(b)** Percentage of healthcare indications. **(c)** Percentage of users: numbers reflect the cumulative counts across all cores with varying operations start dates, with the total timeline spanning ~9 years.

(e.g., CPRIT and DPRIT upcoming) reduces risk. Global companies are taking note, and local venture studios and funds now engage more deeply with academic teams.

Lessons learned

Early hurdles included infrastructure delays, IACUC setup, cross-institution IP and Confidential Disclosure Agreement (CDA) timelines, and occasional throughput gaps. We now mitigate these with pre-award readiness, early TTO engagement and a common CDA template to streamline intake and clarify IP pathways. A persistent barrier is limited discretionary funds for small, decisive proof-of-concept experiments; cores offering pilot funds improve progression. Together, these steps reduce delays while preserving core autonomy.

Training the next generation

Commercialization first, training as a strong secondary benefit

GCC-REACH and ACT primarily exist to commercialize healthcare innovations. Along the way, however, they create powerful training effects. Trainees and participants learn commercialization as a distinct discipline. Many later spin out companies from academic labs.

Foundations of Cancer Therapeutics (FCT) Course

A flagship of the CPRIT-funded Cancer Therapeutics Training Program (CTTP), FCT runs annually, alternating its focus: one year the full drug development pipeline; the next, commercialization. It is required for CTTP postdocs, with additional postdocs, graduate trainees, clinicians and faculty often participating. Offered in-person and virtually, FCT consistently draws 300+ auditors each year.

Rigor and Reproducibility (RR) Program

The RR program, recognized by the Association of American Medical Colleges, has run for almost a decade, teaching common failure modes in R&D, as well as strategies to prevent them. Many cores require RR training for all staff and recommend it for users.

Core rotations

Through CTTP, postdocs complete tailored rotations across multiple cores aligned to project needs (e.g., a biochemistry postdoc needing PK/PD rotates in the PK/PD core). Rotations are 2–8 weeks, and many trainees do more than one. Because cores are subsidized by CPRIT and institutional support, costs (typically paid by postdoc's PI) are limited to consumables (e.g., animals). Trainees gain hands-on skills and see stage-gates applied in practice, improving assay design, implementation and oversight.

Collaborative education in practice

The network runs IDDD roundtable workshops that pair domain-matched regional experts with pharmaceutical leaders (e.g., PK/PD and formulation clinics). The annual IDDD Conference brings national speakers in drug development and, increasingly, device development. These venues serve as oversight and learning forums, revealing gaps, disseminating new methods and aligning expectations across institutions.

Replicability: a blueprint for other hubs and states

This model is a distributed network. Each core keeps its own stage-gates and SOPs. Autonomy is essential. It protects focus,

quality and the distinct expertise of each lab. Replication should start by honoring autonomy and then adding a coordination layer that enables the entire network to move together.

Distributed vs in-house: rationale and trade-offs

Our region lacks a single accessible academic center housing all functions (screening, chemistry, PK/PD, etc.), so a distributed network links autonomous cores via director triage, coordinated referrals and a shared mentor or advisor lattice. This preserves each core's quality systems while enabling fit-for-purpose handoffs. Trade-offs include coordination overhead and multi-party IP complexity; well-resourced in-house models can offer tighter continuity. We mitigate risks through PI leadership with a designated core lead, simple escalation paths, standardized intake and inter-institutional IP agreements. The result is greater throughput and breadth with more projects securing decisive experiments without the cost of a single, fully integrated academic unit.

Collaboration grows the network

Core Directors maintain regular contact through monthly steering committee meetings, an annual consortium conference, monthly roundtable forums and/or other educational programs. Communication is collegial and practical. Successes are recognized at the core level but are shared across the network, because most wins depend on work in multiple areas. This prevents teams from reinventing the wheel and ensures that improvements are consistently flowing to all users.

Why a neutral coordinator matters

A multi-institutional 'Switzerland' organization, such as the GCC or TMC, should handle the cross-cutting tasks: scheduling, MOUs, shared events and the extensive advisor/mentor network. This frees individual cores to focus on science and delivery rather than administration. It also makes it easier to run joint education programs at scale.

Practical steps to copy the model:

i. Start with what exists and form a director council. Do not rewrite SOPs or stage-gates. Inventory produced for each core's current gates/-capabilities, then meet monthly as a director council to review active referrals, method updates and gaps.
ii. Stand up a neutral hub and host recurring forums. Use a GCC/TMC-like 'Switzerland' org. to handle administration. Host regular educational events (roundtables, conference) to align methods and expand network.
iii. Build the mentor lattice and link to commercialization. Recruit experts in modalities, CMC, regulatory strategy and market access. Attach them to roundtables and proposal reviews. Partner with accelerators and REACH-style hubs.
iv. Track simple signals and act. Monitor cross-core referrals, time to schedule the next experiment and mentor touches before key gates. Use these signals to prioritize method updates, close capability gaps and streamline referrals.

When a CPRIT-like program is not available

Combine institutional innovation funds with regional philanthropy and federal grants. Utilize pay-for-use models with sliding scales to maintain broad access.

Concluding remarks

The research climate is volatile with federal policy scrutiny, indirect-cost debates and federal funding risk flags making some traditional outsourcing paths harder. That is precisely where a distributed network helps. A distributed, director-led network has enabled ideas to be turned into partner-ready programs faster and with less risk. The return is evident in the number of startups formed, programs in the clinic and hundreds of millions of dollars in non-dilutive and dilutive funding. The return is also human because the network is training the next generation to run real translational programs and to pivot early when the data demand it. That blend of return on investment and education explains why working together beats going it alone, and why Texas is a smart place to build.

Funding sources

This work was supported by the Cancer Prevention & Research Institute of Texas (RP240430, RP180748, RP220587, RP170719, RP210108, RP200668, RP150578, RP210208, RP190581, RP250465, RP190561, RP150551, RP210119, RP190674) and National Institutes of Health (U01GM152516).

Conflict of Interest

Per the "Undisclosed Conflicts of Interest" guidelines, no authors contributing to this manuscript have any conflicts of interest.

CRediT authorship contribution statement

Suzanne Tomlinson-Mathis: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Acknowledgments

We thank the staff of the GCC, especially Dawn Koob and Kim Smith, for their coordination, program leadership and sustained support of the GCC IDDD consortium and network-wide activities; and Elizabeth Lawrence for support of the Cancer Therapeutics Training Program. We are grateful to Peter Davies (Texas A&M Health Institute of Biosciences and Technology) for his vision and founding of the consortium, and to Stanley Watowich (University of Texas Medical Branch) for program guidance and for championing multi-institutional collaborative commercialization resources. We also acknowledge the many core directors and staff across participating institutions whose day-to-day execution, method development and user support make this network possible, as well as the Texas academic faculty and trainees who use these cores and continually improve them through their projects and feedback.

We acknowledge the GCC IDDD Steering Committee for collegial governance, referrals and shared standards that strengthen the entire ecosystem. We are deeply appreciative of the CPRIT and the State of Texas for visionary public investment, particularly through competitive Core Facility Support and Training Grant awards that enabled the build-out of industry-grade capabilities and training resources within academic settings. Finally, we thank our commercialization partners and mentor/advisor network, including investors, industry scientists, regulatory and CMC experts, whose time

and guidance helped align science with market and clinical realities and whose engagement has accelerated many programs toward IND readiness. Any opinions, findings and conclusions expressed here are those of the authors and do not necessarily reflect the views of the aforementioned individuals or organizations.

Members of the IDDD Core Network

Autumn Marsden[a], Zhiqiang An[b], Peter Davies[c], Dong Liang[d], Qingyun Liu[b], Tom Luby[e], Michael Mancini[f], Jennifer Maynard[g], Stanton McHardy[h], Margie Moczygemba[c] and Clifford Stephan[c]

[a]Gulf Coast Consortia, Rice University, 6100 Main St, Houston, TX 77005, USA

[b]University of Texas Health Science Center at Houston, 7000 Fannin St, Houston, TX 77030, USA

[c]Institute of Biosciences and Technology, Texas A&M Health Science Center, 2121 W Holcombe Blvd, Houston, TX 77030, Houston, TX, USA

[d]Texas Southern University, 3100 Cleburne St, Houston, TX 77004, USA

[e]Texas Medical Center Innovation, 2450 Holcombe Blvd., Suite X, Gate 2450, Houston, TX 77021, USA

[f]Baylor College of Medicine, 1 Baylor Plz, Houston, TX 77030, USA

[g]University of Texas, Austin, 2515 Speedway, Austin, TX 78712, USA

[h]University of Texas San Antonio, 1 UTSA Circle, San Antonio, TX 78249, USA

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Suzanne Tomlinson-Mathis [1,*], the IDDD Core Network [†]

[1] Institute of Biosciences and Technology, Texas A&M Health Science Center, TX, USA

* *Corresponding author.*
stomlinson-mathis@tamu.edu

[†] The members of the IDDD Core Network are listed in Acknowledgments at the end of the article.