The CenterWatch Monthly

In This Issue

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FDA, Experts Talk Today's Diversity Challenges in Oncology and Pathways Forward

By James Miessler

Diversity has become ingrained as a priority in the oncology space, but industry could get stuck discussing existing barriers without formulating clear plans for taking action. FDA Oncology Center of Excellence (OCE) officials, sponsors and the American Association for Cancer Research (AACR) discuss these hurdles and potential next steps at length in a recent *Clinical Cancer Research* journal article.

From the perspective of Lola Fashoyin-Aje, associate director of OCE and an author of the recently published paper (CenterWatch Monthly, Aug. 1), the risk of getting hung up on hurdles that are unsolvable in the near-term, particularly those that will take policy changes or broader stakeholder engagement to address, remains a major challenge for industry in making cancer trials sufficiently diverse and representative of their disease populations.

"For too long, the tone of the conversation has been one where the 'diversity strategy' comprised of a long laundry list of things that were 'too difficult to tackle' and often assigned blame to members of historically underrepresented groups for not being interested in participating in clinical research, not trusting researchers, the list goes on and on," Fashoyin-Aje tells *The CenterWatch Monthly*.

"This way, we were essentially at a standstill," she continued. "Even now that I think we have collective agreement that fundamentally addressing this issue is long overdue, there still exists the temptation to continue this tradition of just listing barriers as the strategy with no clear plan for what is or can be actionable."

The paper, authored by Fashoyin-Aje, OCE Director Richard Pazdur, AACR experts and sponsor leaders, attempts to steer industry away from that temp-

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Site Spotlight: Revival Research Takes Screening to the Street at Outdoor Art Fair

By James Miessler

Art and clinical trials proved a winning combination when Revival Research Institute took its screening operation to the largest art fair in the U.S. and returned with results that far exceeded everyone's expectations.

Revival, a site network with locations in Arizona, Michigan, Illinois and Texas, sought out opportunities to use tents and mobile health units at large community events to screen for an Alzheimer's disease decentralized trial, finally settling on Ann Arbor, Michigan's annual art fair in 2022.

Facing a screen failure rate for the DCT of around 97 percent, Revival set out with the lofty goal of screening not dozens of patients but hundreds. The three-day art fair, which typically draws about half a million people from several states, seemed a good place to do this, Nicole Stiff, Revival's corporate operations and business development manager, told *The CenterWatch Monthly*.

Revival screened 354 people over the course of the festival, exceeding the sponsor's goals (20 screenings per day) by 350 percent. The results were so positive that they made another screening trip to the art fair this year and are on the lookout for more community screening opportunities.

"We really feel if study designs fit into this, we should do this more with the sponsors and have that sponsor support," Stiff said.

Challenges and Solutions

A number of challenges made themselves apparent soon after preparation for the 2022 art fair began, Stiff noted, namely how to promote the event, stick out amongst so many booths, achieve

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Delving Deeper Into the Draft ICH E6(R3)

In this blog post from WCG Avoca, a collaborative founded with the joint objective of elevating clinical trial quality and bringing key stakeholders in the clinical trial process into greater alignment, ***Karen Harvey****, senior director of the Avoca Quality Consortium, outlines the new ICH draft guideline's changes to investigator and sponsor responsibilities as well as the newly added data governance section.*

Investigator

There has been significant expansion of investigator responsibilities related to oversight of delegated clinical trial activities and for computerized systems deployed by the investigator/institution.

In the new Responsibilities section, investigator delegation is addressed. It's not new that the investigator may delegate trial-specific activities, but historically, this delegation has been limited to site staff; the revised language now extends delegation to "other parties," meaning nonsite staff. There is new language stating that the sponsor may identify suitable service providers but it highlights that the investigator has the final decision and retains the ultimate responsibility. This includes ensuring that persons or parties that have been delegated trial-specific activities are appropriately qualified, informed and supervised. An example here would be activities conducted by nonsite staff, such as home nurses arranged by the sponsor.

The informed consent section acknowledges that there may be varied approaches for providing information, such as text or video conferencing, and now calls out that remote consent may be considered, where appropriate. There are now expectations for age-appropriate assent for minors as well as a process for reconsent if the minor reaches the age of legal consent during trial participation.

In the Records section, we see the expectation that the investigator and/or institution ensure that any systems they deploy to maintain and retain trial data should be fit-for-purpose; examples of fit-for-purpose could include that systems are configured correctly, validated appropriately and contain audit trails.

There are a number of clarifications specific to source records, including that the investigator should define what is considered source records, the methods of data capture and the location of those records prior to starting the trial, with updates as needed during the trial.

Sponsor

Here we see substantial changes and a reorganization of the sections. We see some familiar language from ICH E8(R1) – General Considerations for Clinical Trials woven through this section with a focus on incorporating quality into the design of the protocol, identification of the critical-to-quality factors, operationally feasible protocols and key stakeholder engagement.

There has been a significant expansion of the Agreements section, from one subsection to 12. You'll notice that the term CRO has been replaced with Service Provider and that the CRO section has been removed.

Specific to the qualification and oversight of service providers, there is now language stating that sponsors should have access to relevant information, such as SOPs and performance metrics, to support the selection and oversight of service providers while keeping in mind risk-based and proportionate approaches based on activities delegated.

There has been some reorganization of the Quality Management section — much of the content from the Addendum remains the same with a few notable exceptions. Critical data and processes have been updated to critical-to-quality factors and quality-tolerance limits has been replaced with acceptable ranges.

There is new language in the Audit section that audits should be conducted in a risk-based manner; most of the other information is unchanged.

The Safety Assessment and Reporting section includes a requirement for sponsor periodic review of safety information with updates to relevant trial documents as needed.

There is a quite a bit of new language in the Data and Records section, including that the protocol should prespecify data to be collected and the method of collection, which may include a data flow diagram.

There is clarity on corrections to data by investigators and participants calling out that the sponsor should not make changes to data entered by the investigator or participants unless justified and agreed with the investigator and that the sponsor should allow correction of data errors, including data entered by participants.

There is expansion of sponsor responsibilities for computerized systems, including maintaining a record of computerized systems used in the trial, ensuring investigator site staff access is aligned with delegated tasks and assessment of systems deployed by the investigator.

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Understanding Why Sponsors are 'Re-Thinking' DCT Adoption

In this guest column, ***Ken Getz****, Professor and Executive Director, Tufts Center for the Study of Drug Development, presents data-driven insights into why adoption of decentralized trial (DCT) methods is lagging.*

The #NoGoingBack movement, spawned by the necessity of deploying virtual and remote solutions during COVID-19, was a high point in the exuberance of DCT adoption. Thousands of research professionals took the pledge to join this commitment to maintain adoption momentum.

Recent occurrences and insights suggest, however, that DCT adoption momentum is not only aspirational but also is going through a period of retrenchment and evaluation that will likely delay momentum. A February 2023 assessment of clinical trial.gov listings conducted by IQVIA, for example, reported that only 1 percent of industry-sponsored clinical trial starts are using DCT solutions. This past spring, several DCT service providers reported softening revenue and market resistance. In response to these conditions, service providers announced layoffs and restructurings.

A recent Tufts Center for the Study of Drug Development (Tufts CSDD) study found that sponsor-reported use of virtual and remote solutions (e.g., mobile devices, home nursing visits and delivery of investigational drug) supporting clinical trials had fallen well below the levels reported by sponsors during the first year of the pandemic.

Slow adoption of any innovation supporting clinical trial execution is not new, and perhaps we should have expected a similar experience with DCT solutions, despite an unprecedented global pandemic. Tufts CSDD research has shown that the typical adoption cycle for a single company takes a full six years; 20+ years for the drug development industry as a whole to achieve wide-spread adoption, defined as 67 percent or more of companies routinely using an innovative solution.

Tufts CSDD's study characterizing the innovation adoption process in drug development provides insights into why the clinical research enterprise is rethinking DCT adoption and what we can more realistically expect moving forward.

Innovation Adoption in Drug Development

In 2022, Tufts CSDD undertook an empirical study with Avoca, a WCG Company, to gather granular data on innovations supporting all aspects of clinical trial execution, including protocol planning and design; investigative site selection and management; study initiation, ongoing trial management and close-out; patient screening, enrollment and retention; administration of protocol procedures; data collection, management, analysis and reporting.

A working group of 17 companies provided input into defining the areas of focus, designing an interview guide and survey instrument, and discussing preliminary study results and their implications. Tufts CSDD conducted a global survey that yielded 631 total responses from approximately 225 distinct companies (90 percent biopharma; 10 percent contract research organizations (CROs)).

The overall time to adopt an innovation supporting clinical trial execution is 70 months, on average, or 5.8 years. Approximately 20 percent of the total time — 13.8 months — is spent in the initiation stage, in which organizations identify and characterize an operating need, gauge organizational interest and initiate plans to assess an innovation. One out of 10 respondents rated this as the most difficult stage, citing major challenges associated with building crossfunctional support and coordination and the absence of regulatory clarity. Another challenge cited is the misalignment of incentives that dissuade personnel and functions from embracing risk and novel solutions.

In the next stage — evaluation — organizations identify, qualify and engage solution providers, and pilot and evaluate various innovative solutions. This stage takes on average 15.7 months, or 23 percent, of the total adoption cycle. A similar 10 percent of respondents rated this stage as the most difficult. Poorly designed and executed pilots, failure to gather sufficient evidence to assess and compare innovative solutions, and the inability to generalize across the portfolio and demonstrate return oninvestment (ROI) were cited as the largest challenges in this stage.

Industry observers and insiders have noted that the rapid adoption of DCT solutions necessitated by the COVID-19 pandemic substantially compressed the initiation stage and invariably skipped the evaluation stage. In the wake of the pandemic, organizations have regrouped and are looking to conduct considerably more thorough evaluation and ROI assessment.

The third stage involves making the decision to move forward and fully adopt an innovative solution. In the adoption decision stage, organizations review their pilot experience, build internal consensus

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Diversity

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tation, delving into key challenges that remain for oncology diversity, equity and inclusion (DE&I) and recommended solutions, laying these out in the form of a table.

Setting DE&I as a focal point at companies with limited resources and/or experience, for instance, is one major struggle that the authors advise companies to address through capability development and knowledge sharing approaches. Long-term, the continuation of noncompetitive collaborative efforts may help support these resource-limited companies in putting diversity efforts front and center.

Similarly, sites with limited capabilities and experience may unintentionally hinder sponsors' efforts to establish new partnerships and extend their trials beyond academic centers and into community settings. Here, "continued capacity building is essential to long-term success," the authors say.

One big issue underpinning many communities is a lack of healthcare equity that ultimately ends up hampering the ability of underrepresented groups to take part in trials, adds Cristin MacDonald, vice president of client delivery for Avoca, a WCG company.

"One of the challenges that still remain for DE&I in oncology trials is that there simply is not equity in care for underrepresented populations or those from lower socioeconomic backgrounds," MacDonald said. "Oftentimes a patient who is diagnosed at a later stage of their disease due to lack of preventative care will have comorbidities or disease that has progressed so far that it prevents them from being eligible for clinical trials."

Making trials more accessible in community settings, where approximately 85 percent of cancer care is provided, is also important, says Sandy Smith, WCG's senior vice president of clinical solutions and strategic partnering. Specifically, community hospitals and physician practices at the local level still require greater access and support to offer patients the gamut of available treatment options, including the option to sign up for trials.

"One of the challenges that still remain for DE&I in oncology trials is that there simply is not equity in care for underrepresented populations or those from lower socioeconomic backgrounds."

—Cristin MacDonald, vice president of client delivery, WCG Avoca

"One of the easiest options is to offer each and every oncology patient the option to enroll in a clinical trial. Surveys have identified the patient's physician as the most significant influence in having patients consider a clinical trial as a care option," Smith said. "Having access to the trials and then ensuring that each patient is provided the opportunity to be screened for eligibility are key factors. To bring more physicians into clinical research as investigators, mentoring programs are essential."

Evaluating site burden and capability using objective metrics is also pivotal for sponsors to fully understand sites' abilities to enroll and retain diverse participants, the paper says. It's also critical to provide additional training to newly added, inexperienced sites, when needed, so that they are compliant with trial conduct and data quality regulations. But at the same time, there's a need for training diverse, culturally knowledgeable trial staff at experienced sites, too.

A lack of best practice standards for defining trial enrollment goals, too, is a challenge currently faced by industry, according to the paper; the authors propose turning to epidemiologic databases when coming up with enrollment goals, as well as analyzing data from prior trials and conducting meta-analyses. In the long-term, addressing this problem through the establishment of best practice standards will require and be informed by continued dialogue with stakeholders and the refinement of data collection, they say.

"We see many organizations establish diversity strategies that are very vague in their expectations of what a diverse enrollment looks like to them," MacDonald adds. "The organizations that establish quantifiable standards of success are often more vetted to actually making it happen."

In addition, murky compliance requirements surrounding reimbursement for participant trial costs has led to insufficient coverage and subsequently erected another barrier; new policies that clarify the allowed financial reimbursements for trial-related costs are a potential solution to this problem, the authors say. In particular, sponsors should consider "payment models that take a comprehensive approach to addressing costs for patients and providers," as these can help relieve some of the burdens of participation.

"Defining which financial supports are allowable for patient study-related costs through legislation and regulation would provide needed clarity for trial sponsors to address common barriers to participation," the paper says.

U.S. trial site initiation times are also an issue, as they lag behind initiation

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Diversity

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times seen for international sites, the paper says. Sponsors should think about devoting resources to defining and standardizing contracting practices that currently bog down U.S. trial initiation speeds.

Lastly, the paper lists cumbersome trials as an impediment to bringing patients from underrepresented populations into clinical research; in this area, the authors believe that decentralizing study procedures, visits and data collection are critical first steps to take toward making trials more inclusive and easier on patients.

While many in the oncology space have started to engage in cultural shifts within their organizations to take on more active, integrated approaches to diversity, "meaningful, sustainable change will require long-term dedicated efforts from sponsors of all sizes, academic researchers, patient advocates, and federal agencies," the authors say.

"Any process of this magnitude will require redesigning reward systems that incentivize new behaviors as well as ongoing analyses of metrics of success," the paper reads. "Financial incentives from private industry, or federal grants, will be especially important to broaden capacity for conducting clinical trials in the U.S. and ease the burden of participating in clinical trials."

To this end, the authors propose creating a public-private partnership that brings together private and public funds and helps develop comprehensive reward systems for diverse, inclusive trials. A partnership of this nature would also strongly support building agreement on solutions to specific policy and regulatory issues.

Read the full paper here.

Revival Research

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efficient communication across a multidisciplinary team and manage appointments.

Promotion was handled by creating an event webpage where potential participants could learn more about the DCT, check out its eligibility criteria and, importantly, make an appointment at the art fair screening in advance. This was coupled with the deployment of social media advertisements that directed more traffic to the webpage.

Radio ads, local ads and print materials were also important marketing avenues used to inform the surrounding community about Alzheimer's disease and the screening opportunity.

On the communication side, Revival commissioned a software development company to create a program that kept the approximately 60-person multidisciplinary team coordinated. The program also streamlined appointment management, allowed Revival to collect patient leads on a single platform and sent automated appointment reminders by email and text.

With the help of the software, Revival was able to set up 40-minute appointment slots and could have screened up to 740 people over the three-day festival.

Revival Research Institute Stats

Number of sites: 18
Number of studies: 58 on average across all sites
Number of staff: 150

Roles and Responsibilities

The multiple parties involved in the screening event — sponsor, vendors and Revival staff — all served different roles.

Mobile research company PCM Trials provided nurses that consented and drew blood from patients, while staff from Care Access, a company specializing in facilitating collaboration among healthcare workers, served as the central coordinators, taking all of the source documentation to a nearby hotel room, double-checking everything and entering data into the study systems.

While the sponsor's staff were in charge of setting up the booth and promotional materials, Revival's staff were the ones responsible for conducting patient check-ins, check-outs and recruitment, as well as educating patients on trials and Alzheimer's disease and ensuring each patient had a site near them. The education component of the screening event, and the event itself, really resonated well with attendees, said Stiff.

"A lot of patients were very thankful that we were there doing this type of research, and a lot of patients were just happy to see the trial come to them, just having this opportunity," she said. "We also heavily educated people on trials, our company, the study, Alzheimer's disease in general."

Stiff's advice for sites wanting to try a similar approach: just try it.

"We expected to screen 600 people, and we still did really well at 354, but we didn't know what we were doing to set it up. It was all new to us," she said. "If you really want to do something, don't take no for an answer. Push, work with sponsors, show them the value and what it can bring to them and the patients."

ICH E6(R3)

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Data Governance — Investigator and Sponsor

Now we come to the new section in ICH E6(R3): Data Governance — Investigator and Sponsor. You'll notice that Investigator and Sponsor are part of the section title, emphasizing that data governance is a shared responsibility between the two. Many of these concepts were included in ICH E6(R2) in the Sponsor section 5.5 Trial Management, Data Handling and Record Keeping, but now these concepts have been expanded and presented in a more holistic way in the new Data Governance section.

As this is a new section, there is no comparison to share, so I'll highlight a few key points:

- Acquired data from any source should be accompanied by relevant metadata and there should be a planned review of metadata, including audit trails, which should be decipherable and facilitate analysis.
- Processes should be in place to correct data that could impact the reliability of trial results.
- Validation should be risk-based based on the intended use of the system, the importance of the data being collected/generated/maintained in the system and the potential of the system to affect participant rights, safety and well-being and the reliability of trial results. The responsible party, meaning sponsor or investigator, is responsible for the validation status of the system throughout its lifecycle.
- For computerized systems:
  - Sponsors and investigators are responsible for ensuring the expectations in this section of the guidance are addressed in a risk-proportionate manner for the computerized systems they put in place.
  - Sponsors are responsible for reviewing the systems used by investigators, such as electronic health records or other source data collection systems, to ensure they are fit-for-purpose for the trial.
  - The responsible party (sponsor or investigator) should ensure that the companies developing the computerized systems for clinical trials that they deploy are aware of the intended purpose and that the regulatory requirements apply to them.
- Technical support, such as help desk support, should be implemented where appropriate to document, evaluate and manage issues with computerized systems, and there should be periodic reviews of cumulative issues to identify repeated or systemic issues. Read the draft ICH E6(R3) here.

For more information on the Avoca Quality Consortium, click here.

DCT adoption

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to move forward and announce an enterprisewide implementation. Arriving at an adoption decision takes nearly 17 months or one-quarter of the total innovation adoption cycle time. One-third of respondents believe that this is the most difficult stage, citing uncertainty and internal dynamics and politics associated with having insufficient 'evidence' to support management's decision to implement.

The final stage — implementation — takes two years on average and represents one-third of the total time to adopt an innovative solution. This stage entails implementation planning, roll out, communication, training, monitoring and continuous improvement. Nearly half (47 percent) of all respondents rate this stage as the most difficult, citing several major challenges, including the lack of senior management and crossfunctional support and engagement; poor regulatory clarity and support resulting in substantial concern and resistance from regulatory and legal affairs functions; the absence or late preparation of a comprehensive change management plan to guide the organization through full implementation; and failure to provide the necessary investment of time and resources to fully support the transition from adoption decision to full implementation.

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Innovation Adoption Process Durations, Total and Individual Stages, by Company size (N=259)

Mean time in months

Stage	Overall	Larger Pharma	Mid-Size Pharma	Small Pharma	CROs
Initiation	14	12	17	12	7
Evaluation	16	15	19	12	8
Adoption Decision	17	17	19	13	8
Full Implementation	23	23	24	21	14
Total Duration	**5.8 years**	**5.6 years**	**6.6 years**	**4.8 years**	**3.1 years**

Source: Tufts CSDD

DCT adoption

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Variation in the Innovation Adoption Cycle

According to the Tufts CSDD survey, mid-size companies take the longest time — on average 6.6 years — to complete the innovation adoption process. Small companies are nine months faster than larger companies and nearly two years faster (21 months) than mid-size companies. CROs can complete the innovation adoption process in nearly half the time — 3.1 years compared to 5.8 years for pharmaceutical companies (see Figure 1). Indeed, a significant speed advantage and much lower variation around mean durations are observed among CROs at each innovation adoption stage compared to that of pharmaceutical companies.

Small companies — and most notably CROs — bring speed advantages to the innovation adoption process but for different reasons. Smaller companies are generally more nimble than their larger counterparts, with less siloed functional relationships and personnel often responsible for cross-functional activities. With more constrained capital and resources, and pressure from outside investors, smaller companies must often take more risks and arrive at decisions faster. For CROs, executional innovation is central to their ability to differentiate their services and capabilities and retain their clients.

Perceived Challenges

A much higher proportion of mid-size and small companies rated the initiation and evaluation stages as most difficult. Mid-size companies in particular are more likely to positively rate their ability to complete each stage in the process.

Whereas 10 years ago, a larger proportion of companies centralized their innovation adoption functions, only 15 percent of companies today reports using a centralized, dedicated function to drive innovation adoption. The majority (85 percent) of companies reports using a decentralized approach today, relying on individual functional areas to promote, pilot and evaluate new operating innovations.

Most companies are harsh self-critics of their ability to adopt innovative solutions supporting clinical trial execution. Approximately one-third (31 percent) of companies rates the overall adoption process within their organization as 'poor' or 'very poor.' Nearly 80 percent perceives that the process takes 'somewhat' or 'much' longer than expected, and 61 percent believes that the process for their organization takes longer than it does for peer companies. Compared to mid-size and small companies, larger organizations are more likely to perceive that the adoption process takes much longer than expected and that they are slower than their peers.

Closing Thoughts

The drug development industry — like all heavily regulated, research-intensive industries — has long placed a premium on innovations that drive differentiation and competitive operating and performance advantages.

As stakeholders throughout the clinical research enterprise look in earnest to accelerate drug development timelines, the ability to quickly, efficiently and effectively adopt novel solutions supporting clinical trial execution and improve patient engagement is paramount. Although the objectives and cycle times of stages in the adoption process — from initiation to evaluation and adoption decision to full implementation — are rational and necessary, the relative speed of small pharma and CRO companies offers insight and indicates opportunities to accelerate the innovation adoption process moving forward.

The opinions expressed here are those of the author and do not necessarily reflect the views of The CenterWatch Monthly.

Study Lead Opportunities

CenterWatch analyzes data in its drug intelligence database to provide advance notice of clinical trials expected to enter the next phase of clinical development soon. Contact information is provided for follow-up. **Sponsors/CROs:** to list an upcoming trial here, contact Leslie Ramsey, 703.538.7661, lramsey@wcgclinical.com.

Company name	Drug name	Indication
phase 1		
Apogee Therapeutics	APG777	Atopic dermatitis
Celsius Therapeutics	CEL383	Inflammatory bowel disease
Cullinan Oncology	CLN-978	Relapsed/refractory B-cell non-Hodgkin lymphoma
Elevation Oncology	EO-3021	Advanced unresectable or metastatic solid tumors
Inimmune	INI-2004	Allergic rhinitis
PharmAbcine	PMC-403	Neovascular age-related macular degeneration
Pipeline Therapeutics	PIPE-791	Neurological diseases
Synthekine	STK-009 plus SYNCAR-001	Relapsed/refractory CD19+ hematologic malignancies
Wugen	WU-NK-101	Relapsed/refractory acute myeloid leukemia
phase 1b		
Jnana Therapeutics	JNT-517	Phenylketonuria
Lynk Pharmaceuticals	LNK01004	Atopic dermatitis
MEI Pharma	ME-344 plus bevacizumab	Previously treated metastatic colorectal cancer
phase 1/2		
Aegle Therapeutics	AGLE-102	Severe second-degree burns
Asklepios BioPharmaceutical	AB-1003	Limb-girdle muscular dystrophy type 2I/R9
Avenue Therapeutics	AJ201	Spinal and bulbar muscular atrophy
Cullgen	CG001419	Solid tumors
Disc Medicine	Bitopertin	Diamond-Blackfan anemia
IDEAYA Biosciences Amgen	IDE397 plus AMG 193	Tumors with MTAP deletion
Immatics	IMA402	HLA-A*02:01-positive patients with PRAME-expressing recurrent and/or refractory solid tumors
Sosei Heptares	HTL0039732	Advanced solid tumors
SunHo BioPharmaceutical	IBB0979	Locally advanced or metastatic solid tumors
Tango Therapeutics	TNG260 plus pembrolizumab	STK11-mutant cancers

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Study Lead Opportunities continued from page 8

Company name	Drug name	Indication
phase 2a		
Hoth Therapeutics	HT-001	Skin toxicities associated with epidermal growth factor receptor inhibitors
Perfuse Therapeutics	PER-001 intravitreal implant	Diabetic retinopathy
phase 2		
Biosion	BDC-1001	Atopic dermatitis
Bolt Biotherapeutics	Modified COVID-19 mRNA vaccine	HER2-positive colorectal, endometrial and gastroesophageal cancers
Curevac	CAL02	COVID-19
Eagle Pharmaceuticals	CAL02	Severe community-acquired bacterial pneumonia
IDEAYA Biosciences	Darovasertib	Primary uveal melanoma
Enterome	EO2040 plus nivolumab	Colorectal cancer with ctDNA-defined minimal residual disease
Hansa Biopharma	Imlifidase	ANCA-associated vasculitis
Icosavax	IVX-A12	Respiratory syncytial virus and human metapneumovirus virus-like particle vaccine
Tonix Pharmaceuticals	TNX-1900 (intranasal potentiated oxytocin)	Pediatric obesity
Tonix Pharmaceuticals	TNX-1900 (potentiated intranasal oxytocin)	Social anxiety disorder
Xeris Biopharma	XP-8121	Hypothyroidism
Geron	Imetelstat	Relapsed/refractory acute myeloid leukemia or higher-risk myelodysplastic syndromes
phase 2b		
Clearside Biomedical	CLS-AX (axitinib injectable suspension)	Neovascular age-related macular degeneration
Leap Therapeutics	DKN-01 plus bevacizumab and chemotherapy	Advanced colorectal cancer
phase 2/3		
Memo Therapeutics	AntiBKV	BK polyomavirus infection in renal transplant patients
phase 3		
Axsome Therapeutics	Solriamfetol	Attention deficit hyperactivity disorder in adults
Bayer	Finerenone	Chronic kidney disease associated with type 1 diabetes
BioNTech OncoC4	BNT316/ONC-392 (gotistobart)	Metastatic, immunotherapy-resistant non-small cell lung cancer
Cytokinetics	Aficamten	Symptomatic obstructive hypertrophic cardiomyopathy
Karyopharm Therapeutics	Selinexor plus ruxolitinib	JAKi-naïve patients with myelofibrosis
Neumora Therapeutics	Navacaprant (NMRA-140)	Major depressive disorder
PolyPid	D-PLEX100	Prevention of abdominal colorectal surgical site infections
Shionogi	Ensitrelvir	Prevention of symptomatic SARS-CoV-2
Ultragenyx Pharmaceutical	UX143	Osteogenesis imperfecta subtypes I, III and IV

FDA Actions

The following is a sampling of FDA regulatory actions taken during the previous month, compiled from CenterWatch and third-party sources, including the FDA and company press releases. For more information on FDA approvals, visit centerwatch.com/fda-approved-drugs.

Company name	Drug name	Indication	FDA action
Artiva Biotherapeutics	AlloNK (AB-101) plus rituximab	Lupus nephritis	IND approved
Aspen Neuroscience	ANPD001 (autologous cell therapy)	Parkinson's disease	IND approved
BioCity Biopharma	BC3448	Advanced solid tumors	IND approved
Cessation Therapeutics	CSX-1004	Prevention of fentanyl overdose	IND approved
ImmPACT Bio	IMPT-514	Systemic lupus erythematosus	IND approved
LEXEO Therapeutics	LX2020	PKP2 arrhythmogenic cardiomyopathy	IND approved
Molecure	OATD-01	Pulmonary sarcoidosis	IND approved
Nanjing Leads Biolabs	LBL-034	Relapsed/refractory multiple myeloma	IND approved
Nectero Medical	Nectero Endovascular Aneurysm Stabilization Treatment	Infrarenal abdominal aortic aneurysms	IND approved
OnCusp Therapeutics	CUSP06	Platinum-refractory/resistant ovarian cancer and other advanced solid tumors	IND approved
Puma Biotechnology	Alisertib	Extensive stage small cell lung cancer	IND approved
Qualigen Therapeutics	QN-302	Advanced or metastatic solid tumors	IND approved
Sonnet BioTherapeutics	SON-1010(IL12-FHAB) plus atezolizumab	Platinum-resistant ovarian cancer	IND approved
Thryv Therapeutics	THRV-1257	Anaplastic thyroid cancer	IND approved
Tiziana Life Sciences	Intranasal foralumab	Alzheimer's disease	IND approved
Ascentage Pharma	Lisaftoclax	Chronic lymphocytic leukemia/small lymphocytic lymphoma	Approval for a trial granted
ImPact Biotech	Padeliporfin Vascular Targeted Photodynamic (VTP) therapy	Peripheral Lung Cancer	Approval for a trial granted
RevBio	Tetranite (bone adhesive biomaterial)	Dental implant stabilization	Approval for a trial granted

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FDA Actions continued from page 10

Company name	Drug name	Indication	FDA action
Anova Enterprises	DB107	Newly diagnosed high-grade glioma	Study May Proceed granted
Oncternal Therapeutics	ONCT-534	Metastatic castrationresistant prostate cancer	Study May Proceed granted
Alucent Biomedical	AlucentNVS	Vascular procedures	IDE approved
Venus Medtech	VenusP-Valve	Pulmonary heart valve replacement	IDE approved
XVIVO	XVIVO heart technology	Heart transplant	IDE approved
Janssen Pharmaceuticals	Talvey (talquetamab-tgvs)	Patients with relapsed or refractory multiple myeloma who have received at least four prior lines of therapy	Accelerated approval granted
Pfizer	Elrexfio (elranatamab-bcmm)	Patients with relapsed or refractory multiple myeloma who have received at least four prior lines of therapy	Accelerated approval granted
Astellas	Izervay (avacincaptad pegol intravitreal solution)	Geographic atrophy secondary to age-related macular degeneration	Approved
Daiichi Sankyo	Vanflyta (quizartinib)	Newly diagnosed FLT3-ITD positive acute myeloid leukemia	Approved
Emergent Biosolutions	Cyfendus (Anthrax vaccine)	Post-exposure prophylaxis of anthrax	Approved
Ipsen	Sohonos (palovarotene) capsules	Fibrodysplasia ossificans progressiva	Approved
Janssen Pharmaceuticals	Akeega (niraparib and abiraterone acetate)	BRCA-positive metastatic castration resistant prostate cancer	Approved
Octapharma USA	Balfaxar (prothrombin complex concentrate, human-lans)	Warfarin reversal in urgent surgery and invasive procedures	Approved
Sage Therapeutics	Zurzuvae (zuranolone)	Postpartum depression	Approved
Tarsus Pharmaceuticals	Xdemvy (lotilaner ophthalmic solution)	Demodex blepharitis	Approved
Verrica Pharmaceuticals	Ycanth (cantharidin) topical solution	Molluscum contagiosum in people >2 years of age	Approved
GlaxoSmithKline	Jemperli (dostarlimab-gxly) plus chemotherapy	dMMR/MSI-H primary advanced or recurrent endometrial cancer	Approved for new indication
Revance Therapeutics	Daxxify (DaxibotulinumtoxinA-lanm)	Cervical dystonia	Approved for new indication
Taiho Oncology	Lonsurf (trifluridine/tipiracil)	Metastatic colorectal cancer	Approved for new indication
Merck	Ervebo (Ebola virus vaccine)	Prevention of Ebola virus disease in people >12 months of age	Approved for ex-panded age indication
Teleflex	QuikClot Control+ Hemostatic Device	Control of mild and moderate bleeding in cardiac surgical procedures	Approved for expanded indication
Delcath Systems	Hepzato Kit (melphalan/ Hepatic Delivery System)	Unresectable hepatic-dominant metastatic uveal melanoma	Approved
Terumo Blood and Cell Technologies	Reveos Automated Whole Blood Processing System	Blood collection for donation	Approved
Boston Scientific	POLARx Cryoablation System	Paroxysmal atrial fibrillation	Approved

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