STAKEHOLDER MEETING REPORT

29-31 January 2025
Protea Hotel by Marriott Cape Town Waterfront
Breakwater Lodge, Cape Town South Africa

Executive Summary

The African Bioinformatics Institute (ABI) Stakeholders Meeting brought together over 200 experts and leaders in genomics, bioinformatics, public health, and data science from across Africa and around the world. Participants included representatives from ABI's UK- and US-based funders, as well as delegates from prominent bioinformatics networks across Europe and Africa. Held over three days in Cape Town, this landmark gathering marked a significant step toward establishing the ABI as a continental infrastructure to support research, training, and innovation in bioinformatics.

The meeting received input from the stakeholders that will help shape a roadmap for the ABI's structure, governance, and operational framework. This was achieved through a series of plenary sessions, thematic breakout discussions, and Mentimeter surveys. Key outcomes included establishing an Interim Council, widespread endorsement of a federated institutional model, and a consensus on the ABI's mission, overall strategy and approach to sustainability.

Meeting Objectives

1. Define ABI's mission, vision, and operational framework.
2. Assess stakeholder needs for capacity building, research, and infrastructure.
3. Assess governance and operational models rooted in transparency and collaboration.
4. Explore funding strategies and partnerships to sustain ABI's activities.

Meeting Highlights

- 38 Expressions of Interest submitted to host nodes or the ABI hub.
- Four Thematic Breakouts on research, training, databases/services, and infrastructure.
- Consensus on ABI as a federated institute with centralized support and distributed implementation.
- Recommendation for the establishment of an Interim Council and transition planning.
- Commitment to ethical data practices, capacity building, and regional collaboration.

ABI Vision

Suggestions for the ABI Vision include:

- The African Bioinformatics Institute (ABI) leads and coordinates the field of bioinformatics in Africa. Its member scientists cooperate to advance biological research and enhance health and well being on the continent.
- A thriving African bioinformatics ecosystem that advances health, agriculture, and biodiversity through collaboration, innovation, and inclusivity.

Stakeholders from across Africa and the globe gathered to co-create the future of bioinformatics in Africa

Over 300 participants from 48 countries—including 37 African nations—across six continents registered to attend the January stakeholder meeting, both in person and virtually.

Session Summaries

Introduction and Context Setting

- The opening talk recognized the urgent need for a coordinated bioinformatics infrastructure across Africa, leveraging past bioinformatics capacity development activities.
- It identified at least six priority areas, including capacity development, infrastructure, partnerships, workforce, cross-sector applications, and data sharing.
- The different stakeholders that will contribute to or use the ABI were discussed.
- There was an emphasis on equity, integration of artificial intelligence (AI), inclusivity, and government engagement.

Following the introductory session, bioinformatics needs from different sectors (public health, agriculture, human genomics) and large data driven projects (Genomic Centres of Excellence and the African Population Cohorts Consortium) were presented. Breakout sessions were held to gather stakeholder needs in research, training, African resources and support.

Session: Stakeholder Insights: What We Heard

From Researchers

- Differentiate between conducting research in bioinformatics versus bioinformatics use.
- Called for ABI to set a research agenda while supporting the wider community.
- Emphasised mentorship, funding equity, and inclusion of fields like structural bioinformatics and bioimaging.
- ABI should keep imaging in mind as there is opportunity to co-nurture and develop experts between bioinformatics and bioimaging.
- ABI should enable integration across omics data types and support AI-based analysis.
- Encourage innovation in data storage and metadata management.
- Support cross-country and intra-continental networking, reducing reliance on international partners.
- Help researchers translate findings into real-world applications (e.g., precision medicine, drug discovery, surveillance).
- Facilitate research-based student exchange fellowships.
- Encourage visibility and impact of African-led research through shared infrastructure and open collaboration.

From Trainers and Educators

- Requested competency-based, modular training aligned with industry needs.
- Advocated for accreditation, curriculum co-design, and Train-the-Trainer programs.
- Support clinicians and public health professionals with context-specific bioinformatics skills.
- Encourage summer schools, ad hoc courses, and on-demand training.
- Serve as a repository/portal for existing training resources (e.g., eGenomics, roadmap.sh).
- Help build career pathways and increase visibility of bioinformatics roles.
- Conduct a landscape analysis of existing training programs and gaps.
- Avoid overlap by coordinating efforts with existing African consortia and training providers.
- Should provide training with accreditation that is internationally recognised.
- Accreditation can be a source of revenue and credibility for ABI.
- Explore continent-wide professional certification systems and Continuing Professional Development (CPD).

From Data and Infrastructure Experts

- Highlighted the urgent need for accessible High-performance computing (HPC), cloud services, and secure storage.
- Encouraged federated models, advisory support, and platform sharing.
- Support for consultancy marketplaces and tailored analytics support.
- Offer IT support for research projects and students: Pipeline optimization, software installation, and system configuration.
- It may not be feasible for ABI to provide compute resources for all research projects.
- Develop contracts or credit programs with platforms like Amazon Web Services, Google Cloud, Azure.
- Navigate legal and tax barriers for cross-border cloud storage and data use.
- ABI should support a mechanism where the continent can manage and control data access.

From Database and Policy Experts

- Urged the development of Africa-centric, interoperable databases, including a potential virome database, biodiversity, agriculture, and climate data.
- Promote Findable, Accessible, Interoperable and Reusable (FAIR) principles and standardization.
- ABI can play a role in integration and support and emphasize the importance of tool development in addressing critical gaps.
- Recognize and elevate African software developers by increasing visibility and adoption of local tools.
- Address data access restrictions across countries by developing tiered access models.
- Explore support for archives such as the European Genome-phenome Archive (EGA) and tools for real-time data sharing (e.g., for outbreak surveillance).
- Explore local hosting of INSDC-style (International Nucleotide Sequence Database Collaboration) databases with considerations for national sovereignty and legislation.
- Navigate challenges around open science vs. intellectual property (IP) protection (e.g., Nagoya Protocol).
- Investigate monetization models that ensure benefit-sharing while avoiding perceptions of data commodification.
- Encourage adoption of open-source licenses, transparent curation workflows, and robust infrastructure (uptime, security, branding).
- Establish clear selection criteria and an advisory process for supporting tools and databases.
- Help projects develop sustainable infrastructure plans (staffing, hosting, maintenance).
- Consider funding or facilitating licenses for key commercial bioinformatics software.
- Support open science and research frameworks continent-wide.
- Ensure ABI's strategy is needs-driven, scalable, and grounded in community input.

Session: ABI Model & Governance

To prepare for the discussion on possible models for the ABI, existing models were presented, including the Swiss Institute of Bioinformatics, the European Bioinformatics Institute, ELIXIR and the African Institute for Mathematical Sciences. Participants agreed that specific features of the different models presented were attractive for the ABI and suggested a mixed model.

Possible structure discussed

- Central Hub for strategic coordination, administration, and services.
- Distributed Nodes for research, training, services, and/or strategic projects.
- Explore the possibility of regional hubs.
- Oversight from an Industry Advisory Panel and Scientific Advisory Board (SAB).
- Establishment of an Interim Council to guide the transition phase.

Governance

- ABI should operate as an independent non-profit organization by the end of 2025.
- Interim Director: Professor Nicola Mulder; long-term leadership selection to follow.
- Transparent processes for leadership selection and stakeholder engagement.
- Emphasis on diversity, equity, and inclusion (DEI).
- Have legal and ethical aspects (governance, data policy and compliance) in place.

Session: Supporting Early Career Researchers

- Offer training on lab establishment, grant writing, and research management.
- Include topics like science communication and intellectual property.
- Facilitate regional and international networking opportunities.
- Establish an ABI Fellows Program to support peer networking and leadership development.
- Facilitate regional meetups and exchange programs for early-career researchers.
- Create a community of practice for students across African countries.
- Help early-career scientists develop training programs in their institutions.
- Increase bioinformatics awareness at government levels to improve national support.
- Equip early-career researchers with tools for engaging decision-makers and advocating for science.
- Support training for startup development and financial sustainability.

Session: Outreach, Partnerships & Sustainability

Building a Community

- Launch communities of practice in key areas (AI, genomics, biodiversity) to encourage interaction between bioinformaticians and bioinformatics users.
- Partner with the African Society for Bioinformatics and Computational Biology (ASBCB), Africa Centers for Disease Control and Prevention, and global organizations.
- Strengthen ABI's visibility through conferences, media, and ambassador programs.

Sustainability

- Address sustainability through strategic investment, institutional partnerships, and value-based offerings.
- For sustainability, consider the following:
    - Scientific relevance to users:
    - Finance
    - Staff skills and expertise
    - Technical skills for resource development
    - Partnerships (e.g., public, and private partnerships across multiple sectors)
    - Transform what researchers do every day
- Consider the role of the ABI to society e.g., Academia.
- Engage African governments and seek African Union (AU) endorsement.
- Consider priorities and their uniqueness to the ABI's issues.
- Prioritize focused activities, including coordination, centers of excellence, and the availability of resources.
- Establish a collaborative and scalable structure with a clear scope.
- Build on existing strengths to leverage and amplify initiatives.
- Scalable services: consider using collaborative grants and establish a cost model for services for various sectors.
- Periodically review priorities and investments.
- Create sustainable opportunities.
- Pursue a multi-source funding model:
    - Member-state contributions
    - International grants (e.g., NIH, Wellcome Trust)
    - Public-private partnerships
    - Fee-based services and accredited training

Mentimeter Engagement

During the meeting, real-time Mentimeter surveys were conducted to collect insights from attendees. Stakeholders at the ABI meeting provided valuable input via live Mentimeter polls on how the African Bioinformatics Institute should be structured and governed, especially regarding the Scientific Advisory Board (SAB), nodes, and development support.

🌍 *Participant Demographics*

- 300+ participants
- From 48 countries, including 37 African nations
- Represented six continents, reflecting broad global interest in ABI
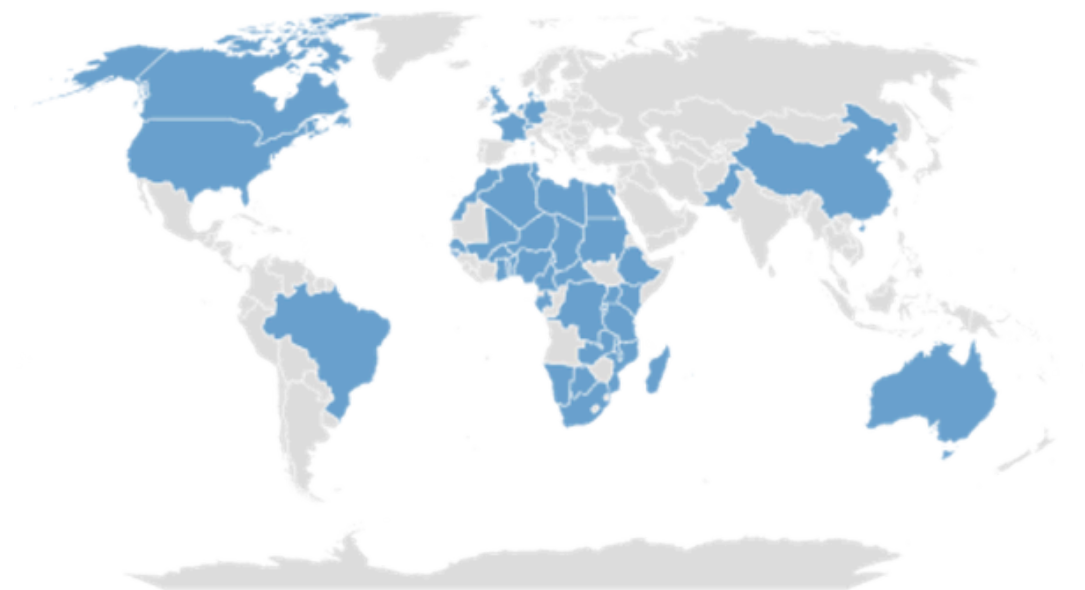
🧬 *Expertise Needed for the Scientific Advisory Board (SAB)*

Suggested domains of expertise:
- 🔬 Bioinformatics and genomics (Clinical, Pathogen, Cancer)
- 🤖 Computational biology, AI and machine Learning
- ⚖️ Ethics, governance & policy *(including principals governing Ethical, Legal and Social Issues [ELSI])*
- 🔒 Infrastructure and cybersecurity
- 🎓 Training, education and curriculum design
- 🤝 Leadership, collaboration and grant writing

A well-balanced SAB will ensure strategic oversight and interdisciplinary guidance

🏛️ *Representation & Governance Models*

Key inputs and considerations for shaping governance frameworks:
- 🏛️ Institutional representation through election or contribution
- 🌍 One representative per country (suggested)
- 👥 Group leaders represented as individuals or by institutions
- ⚙️ Executive structures for coordination to ensure ABI operates efficiently

Ensure balanced, fair, and diverse governance with room for national and thematic input

📈 *Supporting Development Nodes*

Suggested support mechanisms the ABI can offer to Nodes:
- 🎓 Training, mentorship and collaborative projects
- 🌐 Infrastructure access and resource sharing
- 🔬 Joint research, exchange programs and funding support
- 🚀 Guided pathways to full Node status

Development nodes act as the backbone of the ABI, ensuring capacity-building and regional research collaboration

📊 *Accountability and Progress*

Suggested approaches for the ABI to ensure transparency and track progress:
- 📝 Annual reporting by Nodes
- 📅 Optional 2–3 Year in depth reviews
- 🎯 Use of milestones to measure growth

Clear accountability mechanisms ensure transparency and sustained progress across the network

📸 Highlights from the ABI Stakeholder Meeting

Engaged discussions at the plenary

Breakout rooms in action

Synthesizing the meeting discussions

At the end of the second day of discussions with stakeholders, a smaller group was convened with the primary goal of synthesizing insights gathered during the plenary discussions and breakout groups. These sessions were dedicated to consolidating the outputs and using them as a foundation to define the next steps needed to advance the African Bioinformatics Institute (ABI) forward. Below are some of the insights:

GENERAL

- ABI to coordinate, not duplicate, existing efforts.
- Promote ethical research, open science, and FAIR data practices.
- Develop a theory of change to define ABI's impact.
- Establish a clear process for defining ABI's structure and governance framework.
- Develop data governance templates, workflows, and training programs.
- Develop Terms of Reference (ToRs) for the SAB and finalize candidates.
- Define criteria for selecting a host institution for the ABI hub.
- Develop funding and cost models to support group leaders and institutional participation.
- Develop an action plan and white paper for long-term sustainability.
- Form communities of practice for advocacy efforts.
- Engage with bioinformatics society and related scientific societies.
- Develop a strategy to communicate the economic impact of bioinformatics to policymakers.
- Seek an AU letter of support to strengthen ABI's credibility and funding prospects.
- Align ABI's training programs with government priorities to demonstrate impact.
- Engage with pharmaceutical companies, United Nations (UN) agencies, European Union (EU) bodies, international research and innovation groups (e.g. G20, Science 20).
- Hire dedicated personnel to engage with government.
- Work with professional communication agencies for outreach.

TRAINING

- Design a student support strategy without financial burdens.
- ABI could run generic courses and conduct a community needs assessment.
- Connect with industry to determine their training needs.
- Collaborate with industry for internships and innovation pathways.
- Develop self-learning courses and modules to support broad accessibility.
- Develop and deliver modular, certified programs across Africa.
- Support summer schools, rotational placements, and mentorship networks.
- Integrate bioinformatics into clinical and public health training.
- Develop project-specific and region-specific training plans.
- Combine in-person and online delivery modes for accessibility.
- Develop learning pathways for both beginners and advanced learners.
- Provide training standards, accreditation frameworks, and competency mapping.
- Offer training on cloud computing, infrastructure use, and analysis platforms.
- Establish mid-career support and career opportunities.

SUPPORT AND SERVICE PROVISION

- Direct service provision is not ideal, integrating bioinformatics thinking into projects is preferred.
- Develop a cost model for bioinformatics services and service agreements.
- Establish a consultancy-based approach for bioinformatics services: explore consulting models and structured marketplaces for services.
- Support infrastructure access (not direct provision) via cloud/HPC models and trusted research environments.
- Provide computational infrastructure and data analysis platforms across disciplines.
- Provide working environments adapted to project needs (customized platforms, toolkits).
- Recommend standards, SOPs, and procurement frameworks.
- Provide access to journals, toolkits, and shared cloud resources for under-resourced institutions.
- Develop a data product strategy for ABI.
- Facilitate data access to existing datasets across Africa.
- Provide or facilitate access to genomic data analysis tools, phylogenetic and epidemiological modeling, and functional annotation platforms.
- Conduct a landscape analysis of African bioinformatics infrastructure.

Next Steps

- Finalize and share the meeting outcomes summary and action items.
- Circulate forms for SAB and Interim Council nominations.
- Establish an Interim Council and Task Force to finalize the criteria and processes for appointing a Director and identifying the ABI hub and sites.
- Set up communities of practice.
- Develop an interim training plan to prepare for the first courses and potentially a summer school.
- Meet with representatives of existing Pan African projects to identify their data needs.
- Launch ABI website and branding.
- Co-host the International Society for Computational Biology (ISCB) Africa and African Society for Bioinformatics and Computational Biology (ASBCB) Conference on Bioinformatics in April 2025 to showcase ABI's initiatives and engage stakeholders.
- Conduct a landscape analysis of bioinformatics capacities and gaps across the continent.
- Develop ABI's white paper and theory of change.

Get Involved

Be part of shaping the future of bioinformatics in Africa:

🌐 *Visit:* https://bioinformaticsinstitute.africa
✉ *Contact:* abi-info-group@uct.ac.za
📢 Follow us on social media:
- *Linkedin:* African Bioinformatics Institute
- *X:* @AfrBioInstitute
- *Bluesky:* @abinstitute.bsky.social

Acknowledgments

Access Materials

📁 Full meeting documentation: https://tinyurl.com/abi-meeting-2025