

Growth strategy for Oslo Cancer Cluster

A Global Consulting Project

11TH APRIL, 2014

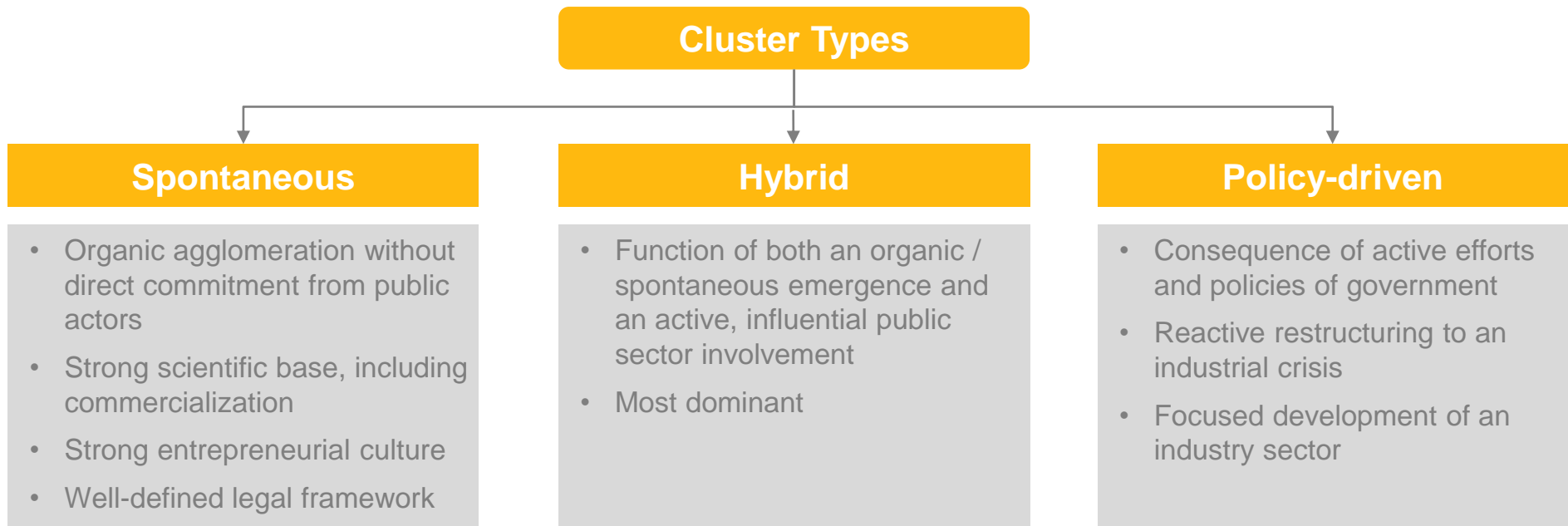
HUSSEIN FADLALLAH | SHINICHI NIKKUNI | NIDHI SHETH | SUSAN THAMPI

Background

What is a cluster?

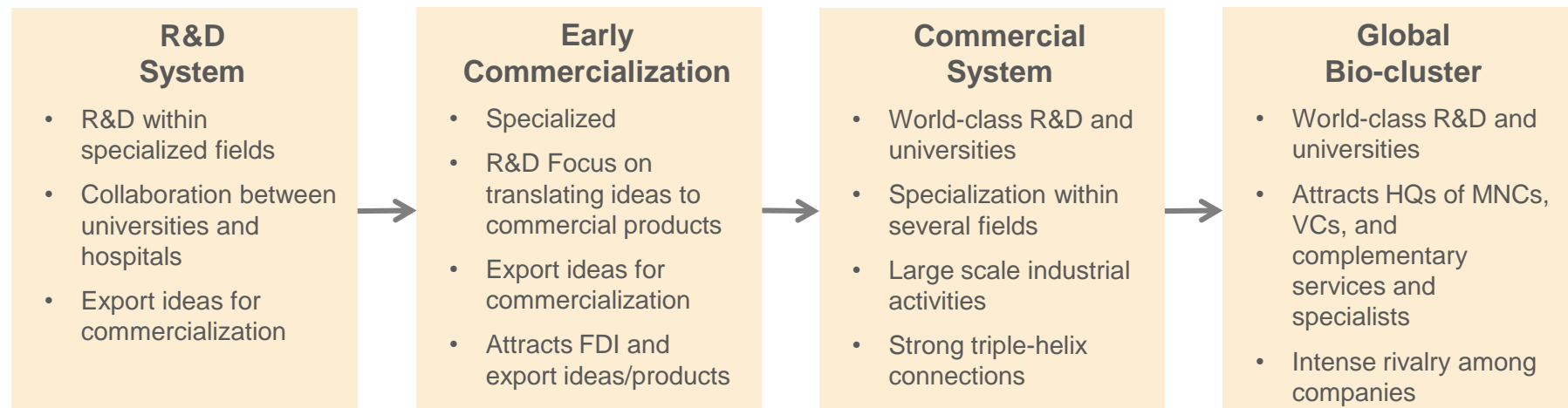
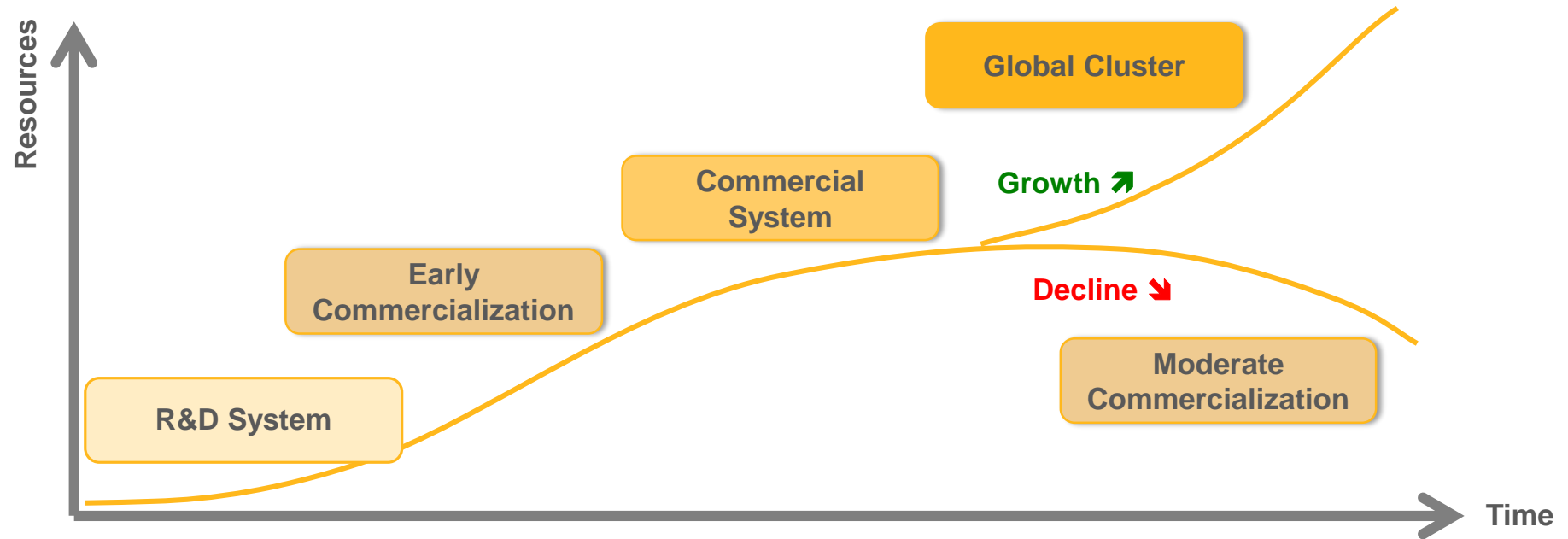
“Clusters are **geographic concentrations of interconnected companies and institutions in a particular field, extending laterally to manufacturers of complementary products and to companies related by skills, technologies, or common inputs.**”

- Michael Porter



Background

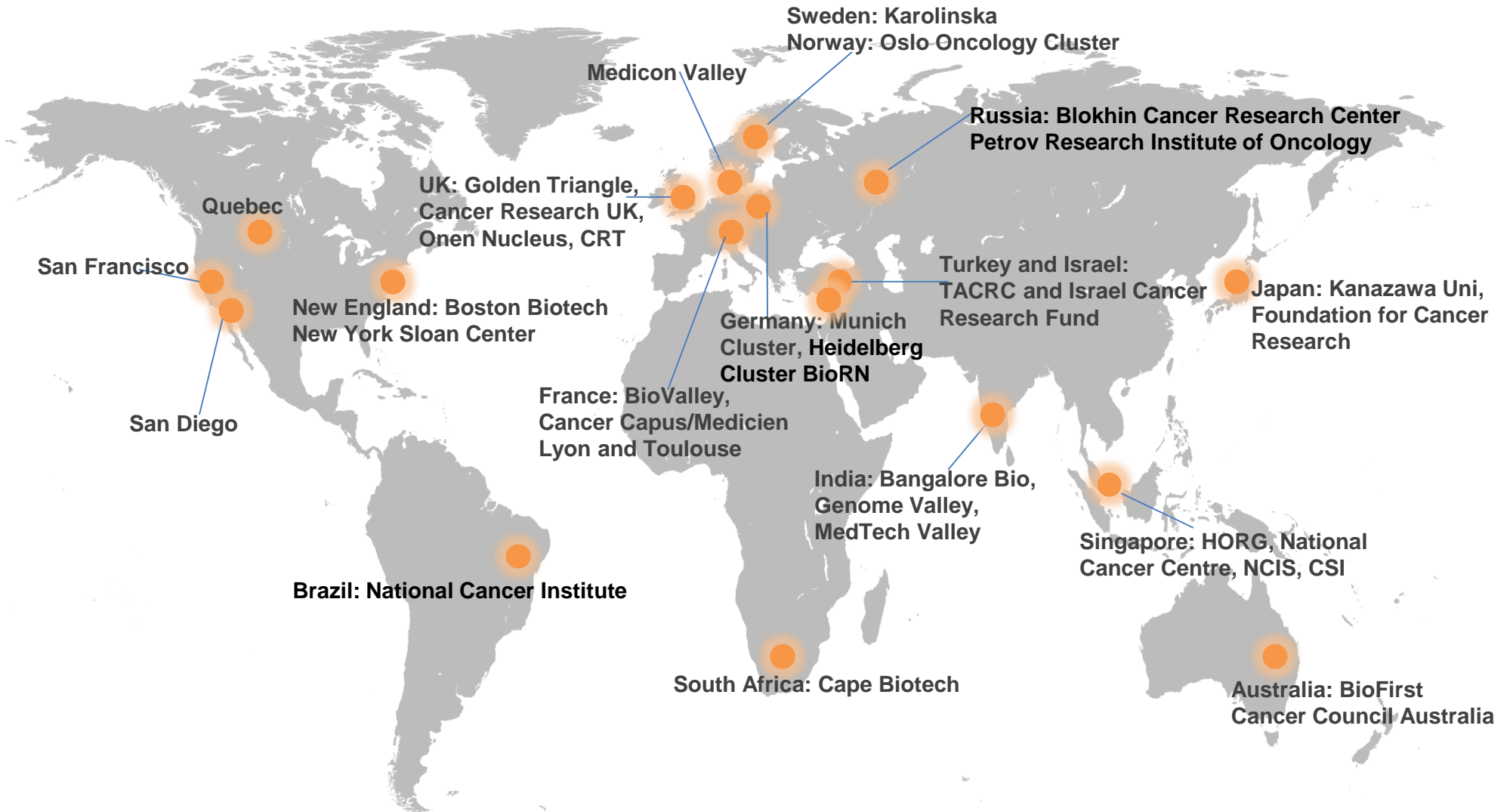
Growth & evolution of clusters over time



Source(s): Clusters Balancing Evolutionary and Constructive Forces, Orjan Solvell, 2009, The Biopharma Landscape in Norway (BCG 2007)









Oncology focused life science clusters

Competitive landscape both within European and global community



Comparative macro overview of four clusters

Oslo is uniquely positioned with a clear focus & dedicated cluster organisation

#	FACTOR	BOSTON Biotech	CAMBRIDGE Biotech	MUNICH Biotech	OSLO Oncology
					
1	Type	Spontaneous & Established (Global Bio cluster)	Spontaneous & Established (Commercial System)	Hybrid & Established (Commercial System)	Hybrid & Emerging (Early Commercialization)
2	Age	36 years	50 years	27 years	18 years
3	# LS Companies	690	400	350	64
4	Anchor Institutions	<ul style="list-style-type: none"> Harvard MIT MassGen Hosp 	<ul style="list-style-type: none"> University of Cambridge Addenbrooke's 	<ul style="list-style-type: none"> LMU TUM Max Planck 	<ul style="list-style-type: none"> Oslo University Hospital
5	Name				
6	Age	29 years	17 years / 16 years	18 years	8 years
7	Team Size	26 members	9 members / 12 members	17 members	6 members
8	Annual Funding (NKK)	18 Mn (100% member & services fees)	10 Mn / 10 Mn (100% member & services fees)	11 Mn (100% govt. funds)	9 Mn (50% govt. funds + 50% member fees)

CLUSTER

CLUSTER ORGANISATION

Criteria for comparative detailed assessment of four clusters (1/2)

10 factor assessment mapped against 3 growth strategy criteria

#	Critical Success Factor	Funding		Innovation			Internationalisation	
		For start-ups	For cluster management organisations	Growth opportunities	Collaboration opportunities	Commercialisation opportunities	International Expansion of Cluster	International scientific talent
1	Scientific Base <ul style="list-style-type: none"> Leading research / academic organizations Critical mass of scientists 			✓	✓	✓	✓	✓
2	Entrepreneurial Culture <ul style="list-style-type: none"> Commercial awareness Role models / 2° entrepreneurs 	✓		✓	✓	✓	✓	✓
3	Growing Company Base <ul style="list-style-type: none"> Thriving spinoffs and start-ups Mature role-model companies 		✓	✓	✓	✓	✓	✓
4	Ability to attract skilled labour and key actors <ul style="list-style-type: none"> Critical mass of employment opportunities Image/reputation of cluster Attractive place to stay 	✓			✓		✓	✓
5	Skilled Workforce <ul style="list-style-type: none"> Experienced managers and trained workforce Training courses at all levels 		✓	✓	✓	✓	✓	

Source(s): Krause, 2010; JBS analysis

Criteria for comparative detailed assessment of four clusters (1/2)

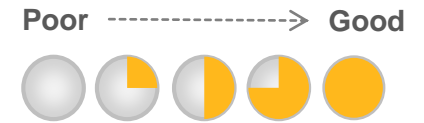
10 factor assessment mapped against 3 growth strategy criteria













































#	Critical Success Factor	Funding		Innovation			Internationalisation	
		For start-ups	For cluster management organisations	Growth opportunities	Collaboration opportunities	Commercialisation opportunities	International Expansion of Cluster	International scientific talent
6	Financing - Public and Private <ul style="list-style-type: none"> Government funds VC / angel investors 	✓	✓	✓		✓		
7	Infrastructure <ul style="list-style-type: none"> Incubators, wet labs Good transportation links 			✓	✓	✓	✓	
8	Strong Networks: Internal and External <ul style="list-style-type: none"> Shared aspiration Frequent collaborations Close functional proximity 			✓	✓	✓	✓	✓
9	Supportive Government and Policies <ul style="list-style-type: none"> National and regional support policies Well-defined regulatory framework 	✓	✓	✓	✓	✓	✓	✓
10	Supporting Business Services and Large Related Companies <ul style="list-style-type: none"> Legal, patent, recruitment, property advisors Large companies 	✓	✓	✓	✓	✓	✓	✓

Source(s): Krause, 2010; JBS analysis

Snapshot of Detailed Categorical Comparison

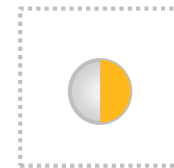
Overall 10 factor assessment of the comparative clusters



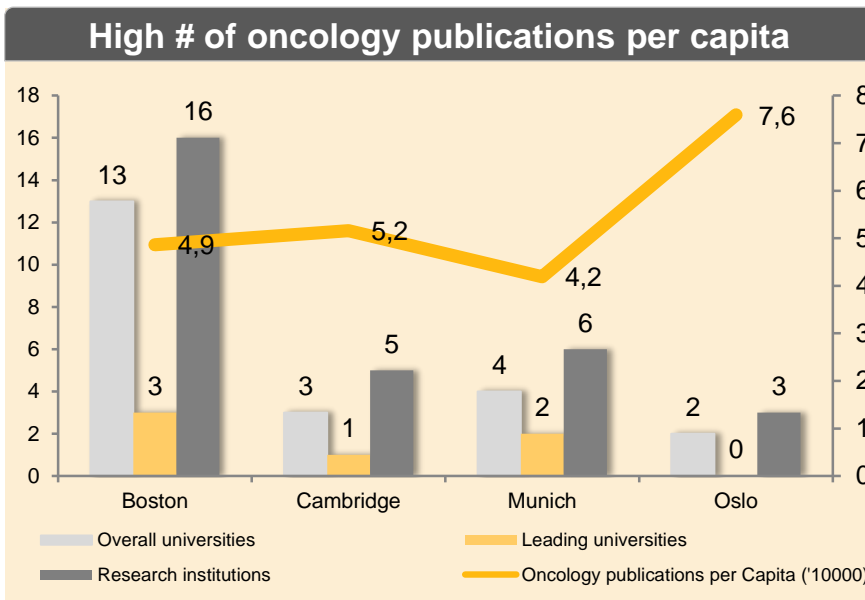
	BOSTON Biotech 	CAMBRIDGE Biotech 	MUNICH Biotech 	OSLO Oncology 
1. Scientific Base				
2. Entrepreneurial Culture				
3. Growing Company Base				
4. Ability to Attract Skilled Labour and Key Actors				
5. Skilled Workforce				
6. Financing - Public and Private				
7. Infrastructure				
8. Strong Networks/Internal and External				
9. Supportive Government and Policies				
10. Supporting Business Services and Large Related Companies				

1. Scientific Base

Strong scientific platform presents an opportunity for growth



KEY FINDINGS



Strong and focused scientific base in Oslo

- ↑ R&D **focus** on cancer **therapeutics**, with strengths in personalized medicine & immunotherapy
- ↓ **Limited** focus on oncology diagnostics / medical devices (25%)
- ↑ Cancer registry & bio bank - **strong assets** that present opportunity for more R&D
- ↓ Scientists **lack incentives** to pursue research

BEST PRACTICES

Government incentives to branch R&D towards SMEs in parallel with academic expenditure



- **MassBioEd** supports **STEM education** with a **biotech focus** via school programs & workforce training
- **US\$2.5 billion** in NIH funding for basic research in 2012, MA receives 11% of NIH research funds



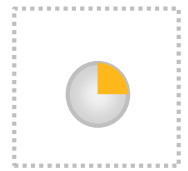
- Significant **public** investment - **£212m MRC** Laboratory for Molecular Biology (LMB)
- **37** globally renowned **research institutions** in and around Cambridge



- **Active** government interest & support to boost **innovation in industry**, in addition to academia
- Global top 10 countries in terms of R&D expenditure as a percentage of its GDP

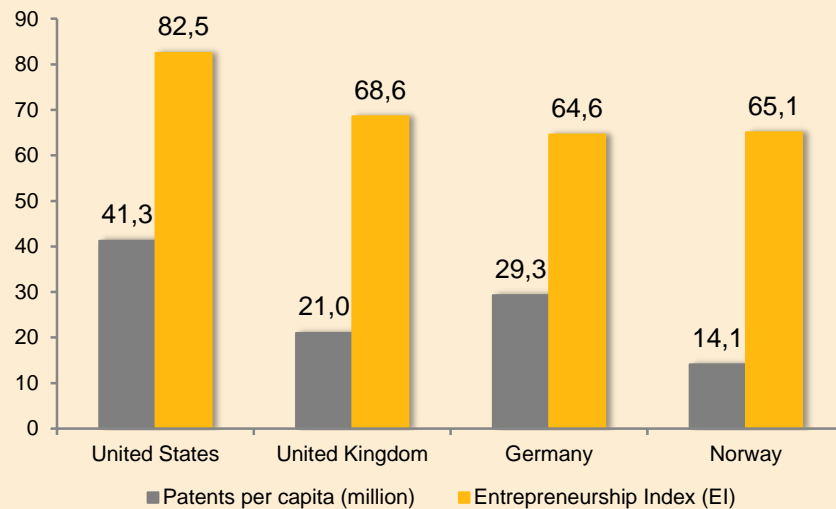
2. Entrepreneurial Culture

Untapped commercial potential due to cultural barriers & limited tools



KEY FINDINGS

High EI, but low patents per capita



Entrepreneurship ecosystem requires fostering

- ↓ Lacks adequate training courses, mentorships, and a mature TTO process
- ↓ High # of publications, but low # of patents
- ↓ 80% of survey respondents - culture of risk aversion in Norway poses a limitation for commercialisation

“Norwegian mindset is a barrier to commercialization. It is not right to think about money.”

Stein Kvaloy, Head of Dept. of Oncology, Oslo University Hospital

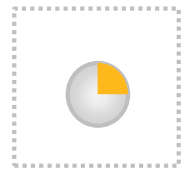
BEST PRACTICES

Local source of innovation, “grey heads” and incentives (\$\$) are essential to boost the culture

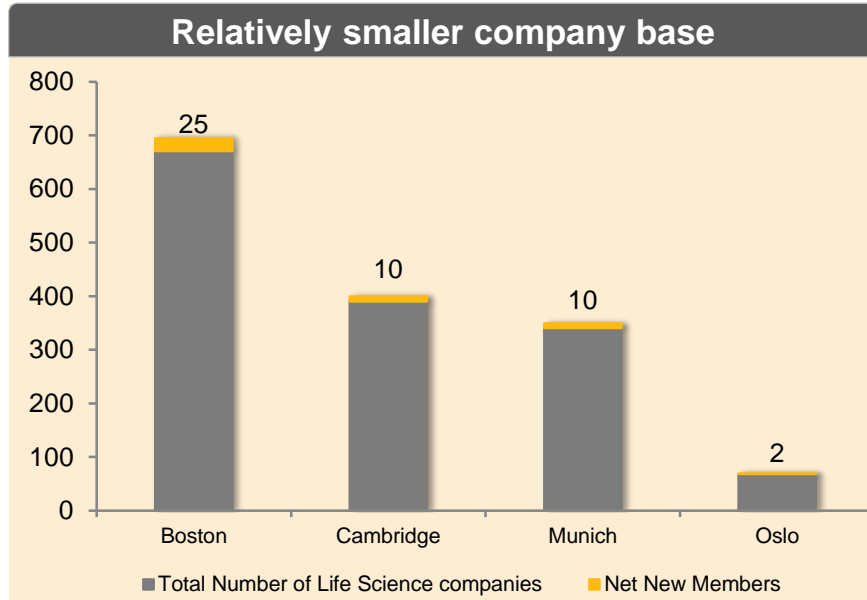
-  High level of nurturing in universities + risk-taking culture → over 100 new startups every year
- MassConnect** – platform for connecting mentors (biotech founders) to mentees (new entrepreneurs)
-  Peer groups - CUE, CUTEC | Competitions - i-Teams, OneStart | Start-up boot camps & weekends
- 40+ Entrepreneurs in Residence
-  Proactive scouting for commercial opportunities by BioM in partnership with TTO
- m4 award - sponsors 5 entrepreneurs (€500,000) for 2 years every two years

3. Growing Company Base

Limited # of new spinoffs, but renewed vigor to innovate at OUH



KEY FINDINGS



Focus on therapeutics may be a limiting factor

- ↑ New director at OUH is **focusing** on ↑ **patents**
- ↓ Sales & marketing of large pharma present, but **unwilling** to **move R&D** to Oslo
- ↓ Inven2 (TTO) lacks capacity & expertise

“Teaming up pharma & diagnostic business areas in the context of personalised healthcare have been critical in the success of Penzberg.”
Claus Haberda, Site Manager, Roche Penzberg

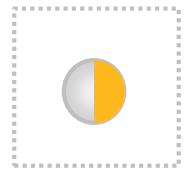
BEST PRACTICES

Bottom-up boost to build start-ups is quintessential in the initial phases of cluster growth

- Faculty Startup Grant – Government initiative to retain prominent faculty with grants (\$250,000 per year for up to 3 years), in a 1:1 match with the academic institution
- Cambridge Enterprise (TTO) manages 1000 active deals & works with > 1200 researchers
 - Collaborative push with large pharma R&D Ex: AstraZeneca
- Strategic focus from Bio-m to foster startups & spinoffs (bottom-up) rather than attracting big pharma
 - Higher investment from federal government and Bavarian state authorities.

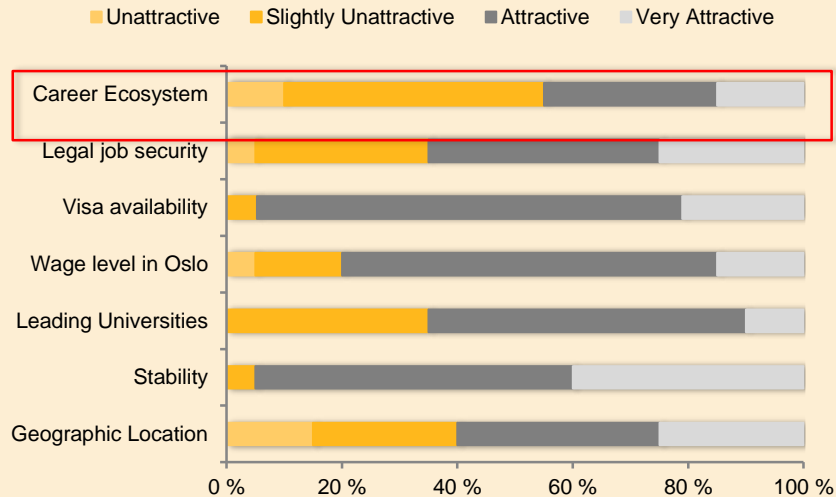
4. Ability to Attract Skilled Labor and Key Actors

Mixed perception about attractiveness



KEY FINDINGS

Lack of career ecosystem is least attractive factor



Strong marketing outreach is critical



- ↑ Stable political and economical landscape
- ↓ High cost of living and personal taxes
- ↓ Most scientists are contract-based even after 12 months in tenure, despite regulations
- ➔ Existing big firms focus on commercialisation that require local talent

“You would have to build a proposition – how exciting is the science or technology?”

Karl Simpson, CEO, LiftStream

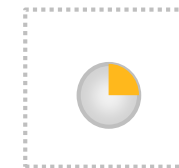
BEST PRACTICES

Attracting professional and academic talent relies on broader economic programs

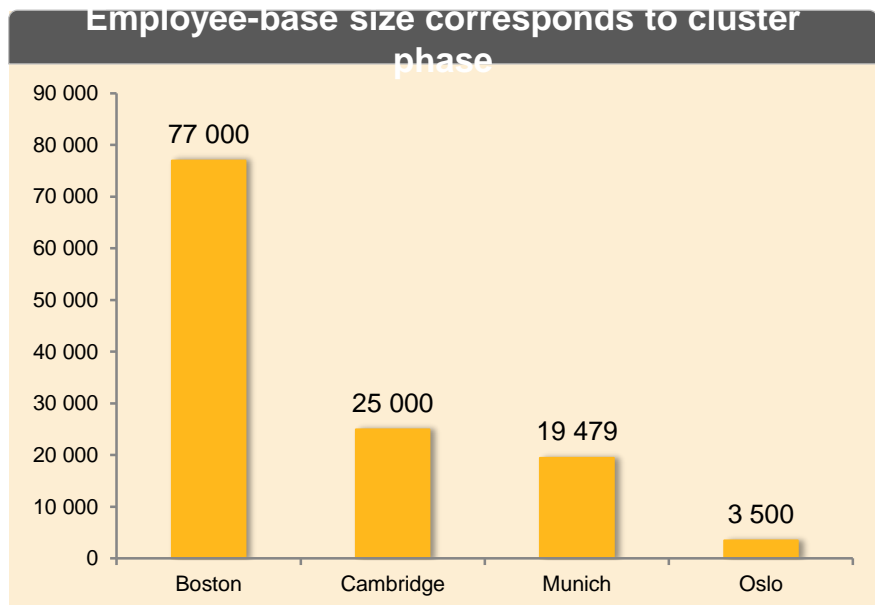
-  Optional Practical Training – International students allowed to work for 12 months on student visa
- 24 month OPT extension for STEM majors
-  Very high number of scholarships to international students
- Special visa category for entrepreneurs that is relatively less stringent
-  Return to Bavaria initiative – successful at retaining academic & managerial skills in the ecosystem
- “Research-in-Germany” portal - comprehensive guide about opportunities for scientists

5. Skilled Workforce

Limited clear initiatives for attracting & retaining skilled workforce



KEY FINDINGS



Limited business and commercial skillset

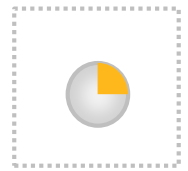
- ↑ Courses on entrepreneurship / management present, but there's room for improvement
- ↓ Relatively small ecosystem translates into a limited skilled workforce presence
- ↓ Limited commercial training for scientists, who remain to be the bulk of the working force
- ~50% of members neither satisfied nor dissatisfied with OCC's role for "workforce & competence development"

BEST PRACTICES

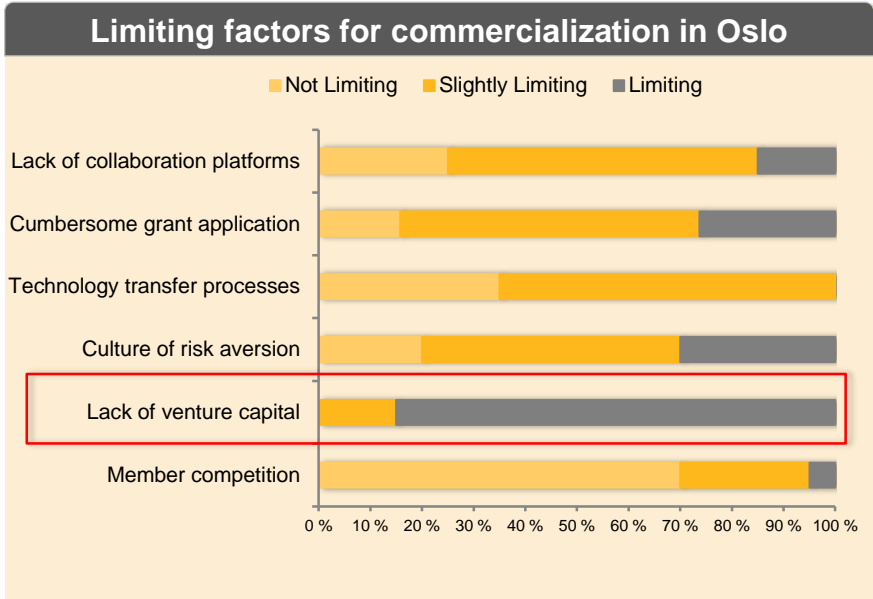
- ### Business & commercial training being adopted aggressively to match scientific development
-  Workforce Training Fund – State grants up to \$100,000 to upgrade skills of new or incumbent workers
 - \$15,000 grants for "off-the-shelf" worker training programs approved by the state
 -  Peer to peer themed discussions facilitated by Cambridge Network
 - eLSI portal: Internationalisation to non-European regions, language & culture business training
 -  Max Planck holds over 60% of international talent within its research man-power
 - Bio-m collaborates with universities in Munich to offer LS executive MBA

6. Financing External – Internal

Early stage startup funding driven primarily by two main seed funds



KEY FINDINGS



Lack of VC funds is the main concern for members

- ↓ Relatively **longer/riskier ROI** in comparison to oil hinders VC involvement
- ↑ National and regional **grants** are the **main funding** sources
- ↓ **Grant funding process** is highly **fragmented** and **complicated**

“The landscape is in need of investors, business angels, or early believers”
- Thomas Andersen, CEO, Nextera

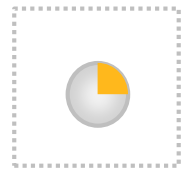
BEST PRACTICES

Alternative funding sources than private VCs are pursued for growth and sustainability

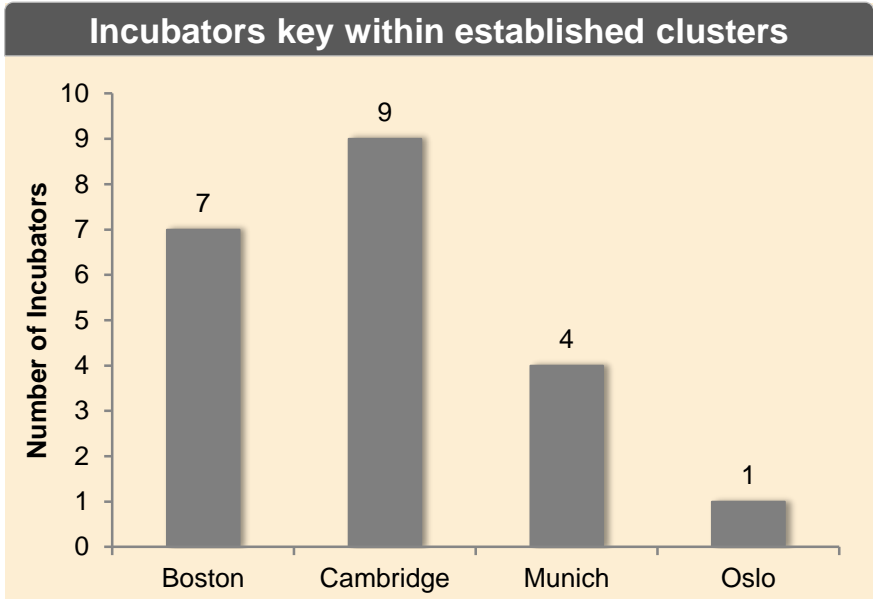
- In 2008, **MA** initiated a 10-year, **\$1 billion** investment in **life sciences**
- Crowd-funding, charities, and angels investments** are equivalent to **VC investments** in the US
- Clinical Research Facilities set up to speed up translational research (£102 million in funds)
- “**Cambridge Phenomenon**”, success stories & proximity to London attract VCs
- Growth fund** of up to € **250 Million** for startups and innovation initiated in Bavaria (2014)
- Bio-m** currently undergoing negotiations with undisclosed parties to initiate **independent seed fund**

7. Infrastructure

Innovation Park has the potential to accelerate cluster growth




KEY FINDINGS






Proximity and sharing resources are critical

- ↓ There is currently **no accelerator** and only one prospective incubator
- ↓ **Minimal marketing** on **value-added services** has **limited perceived value** of incubator
- ↑ Strategic **Innovation Park** location and proximity to **University Hospital**

“The biotech industry in Norway requires the same level of start-up nurturing infrastructure as with the leading industries”
Per Walday, (PCI Biotech)

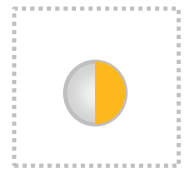
BEST PRACTICES

Incubation targets a more coherent and collaborative infrastructure

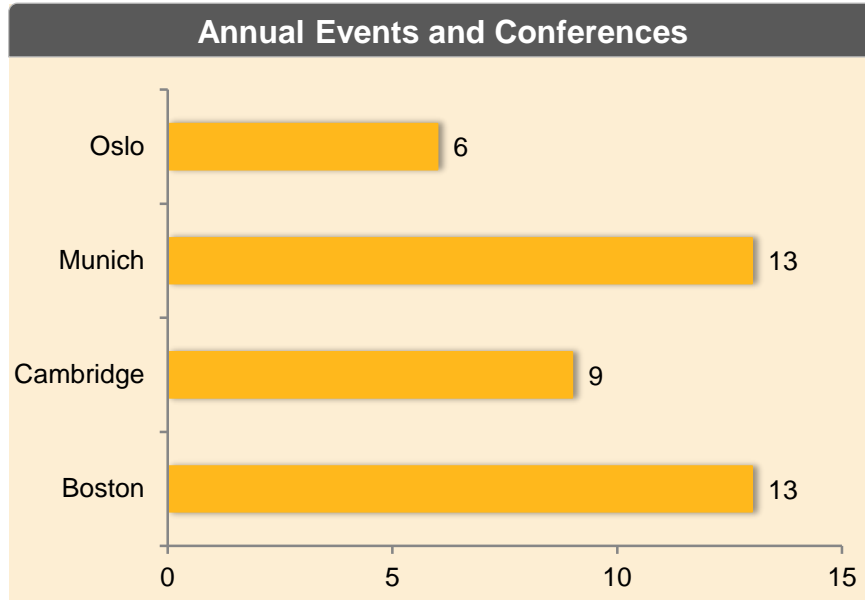
-  • Boston incubator **interconnected to 6** other incubators in MA → access to **wider network**
- **2.6 Mn sq. ft** of **commercial lab space** added in MA | **2 Mn sq. ft.** in **pipeline**
-  • **London-Standed-Cambridge Consortium** working to improve region’s **connectivity**
- Solid, cost understanding of the infrastructure required to support this growth
-  • **IZB incubator** management provides a converged set of services like childcare, etc.

8. Strong Networks/Internal and External

Positive collaboration environment within the Oslo cluster members



KEY FINDINGS




Limited incentives for two-way collaboration

- ↓ “Not-so-positive track” record of OUH collaboration with **large firms**
- ↑ **85%** members **satisfied** with OCC’s **networking** services
- ↓ **International outreach** by cluster members done on an scattered and **individual basis**

“Amgen would be willing to invite R&D representatives to Oslo for speaking and maybe collaboration later.”
Elena Deak, Commercial Manager, Amgen Norg

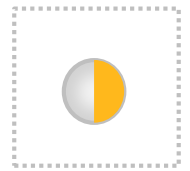
BEST PRACTICES

Collaboration, national and international, is often driven by a reciprocated benefit and added value

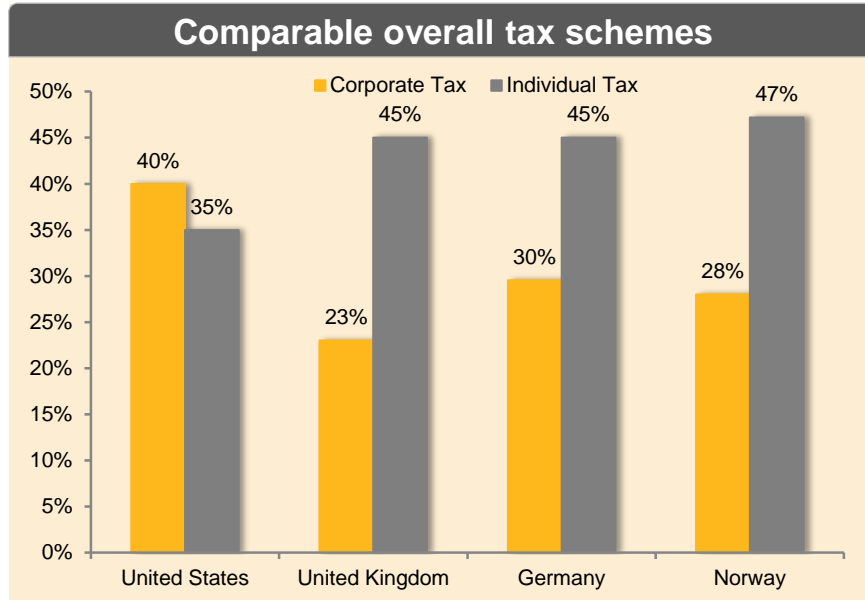
-  • MassBio **CRO CMO Gateway** - online **portal** to facilitate direct, real-time **access** to cluster members across value chain
-  • **One Nucleus** conferences are regarded as **Europe's largest** life science and healthcare gathering
-  • **Science Days** led by Bio-m – Large pharma such as **Roche** interact openly with startups and entrepreneurs
- Bio-m provides members **access** to not only in NA and EU conferences and alliances but also in **Asia** (Bio-Japan)

9. Supportive Government Policies

Need for aggressive government support to jump-start innovation



KEY FINDINGS





Slow reimbursement & passive matching

- ↓ **Slow** and cumbersome processes for drug inclusion in **reimbursement** formularies
- ↓ Quite often, even Norwegian oncology drugs with **high potential** do **not** make it to the **formulary**
- ↓ Norwegian government's investment arm (Investinor AS) is **risk-averse** and passive

“Government incentives such as tax scheme and transportation would help in the process of transforming Oslo into a hub”
Jan A. Alfheim, CEO, Nordic Nanovector

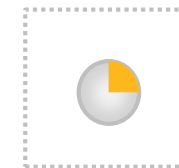
BEST PRACTICES

Government's involvement is critical, especially when it comes to attracting big pharmas and VCs

-  • **Life Sciences Tax Incentive Program** (govt. run) offering companies nine distinct **tax incentive** schemes..
-  • **Aggressive** policies from investment and educational government bodies to spur innovation (Ex. **2:1 investment** matching in the cluster's early stages)
- **Government** facilitated the relocation of big pharmas (ex. GE Healthcare), through an **accessible location**

10. Presence of Supporting Business Services

The industry value chain lacks in-house expertise in key areas



KEY FINDINGS

Supporting Services	Supporting Services			
	Boston	Cambridge	Munich	Oslo
Information & Communication;	✓	✓	✓	✓
Website/Newsletter;	✓	✓	✓	✓
Lobbying;	✓	✓	✓	✓
Training	✓	✓	✓	✓
Research Databases;	✓	✓	✓	
Marketing;	✓	✓	✓	✓
Internalization	✓	✓	✓	✓
Tracking Cluster Performance;	✓	✓	✓	✓
Business Coaching/ Mentoring;			✓	
Direct Financing;				
Organizing Partnering Events;	✓	✓	✓	✓
Group Purchasing	✓	✓	✓	
Incubation and Tech Transfer	✓		✓	

Best Practices	
	<ul style="list-style-type: none"> Purchasing consortium provides tangible and significant costs savings for the members, and is marketed aggressively.
	<ul style="list-style-type: none"> OneNucleus plans the topics and coverage areas of thought-provoking talks/conferences based on the collective needs of its membership base. OneNucleus provides membership tiers based on the size of the company and on the level of services required (Silver/Gold).
	<ul style="list-style-type: none"> Bio-m collaborated with the main TTOs to share resources to proactively scout for innovation The Bio-m AG is an investment and consultancy firm associated with the entrepreneurs and startup companies.

Oslo Cancer Cluster Outlook

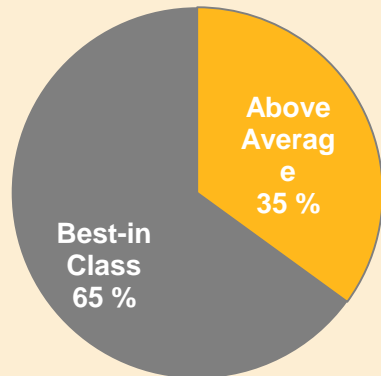
Strong momentum and drive for growth from within



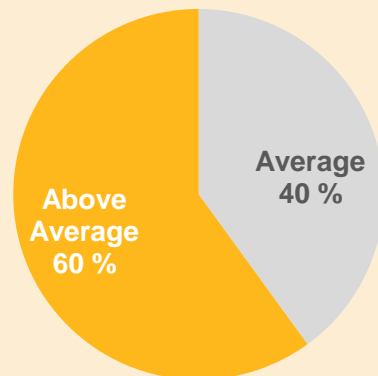
KEY FINDINGS

Positive perception of reputation from within

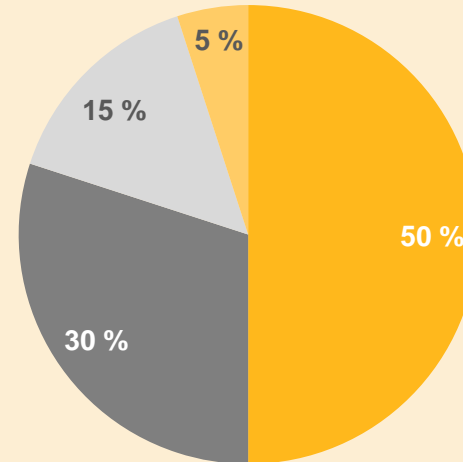
National Reputation



International Reputation

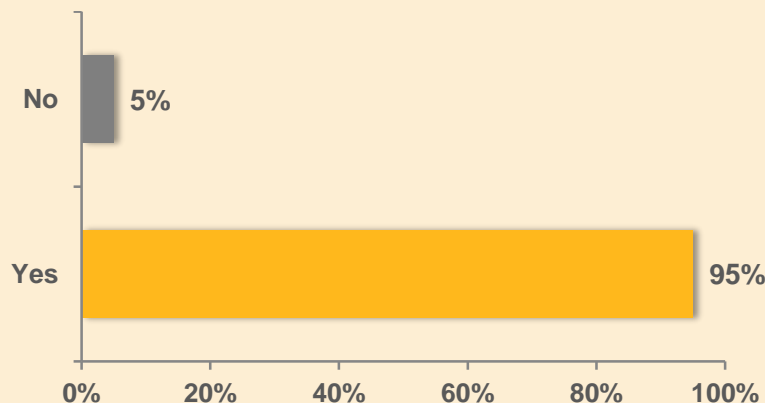


Growth potential envisioned – although varying



- Amongst the top 5 oncology clusters in Europe
- Amongst the top 10 oncology clusters in Europe
- Amongst the top 5 oncology clusters worldwide
- None of the above, specify

Sense of belonging within the cluster



Value creation and incentivizing is a key

“The Algeta success-story not only confirms that we hold world class medical and nuclear expertise in Norway, but it also contributes to value creation” Minister of Trade and Industry, Trond Giske

“The greatest threat to the Massachusetts life sciences cluster is a diminished reward for innovation. If healthcare reform undermines that incentive, this entire cluster could disappear overnight.” Impact 2020’s Advisory Board member, Vicki Sato



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