

# DRIVE-AB and role of SMEs in antibacterial drug R&D

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# DRIVE-AB

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- WP 1A: Define “responsible” use of antibiotics
- WP 1B: Set, communicate and revise public health priorities
- WP 1C: Develop antibiotic valuation models
- WP 2: Create, test and validate new economic models
- WP 3A: Coordinate and manage the project
- WP 3B: Stakeholder platform and external communication

# DRIVE-AB - WP2 vision

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Transforming the way policymakers stimulate innovation, responsible use and global access of novel antibiotics to meet public health needs.

ND4BB

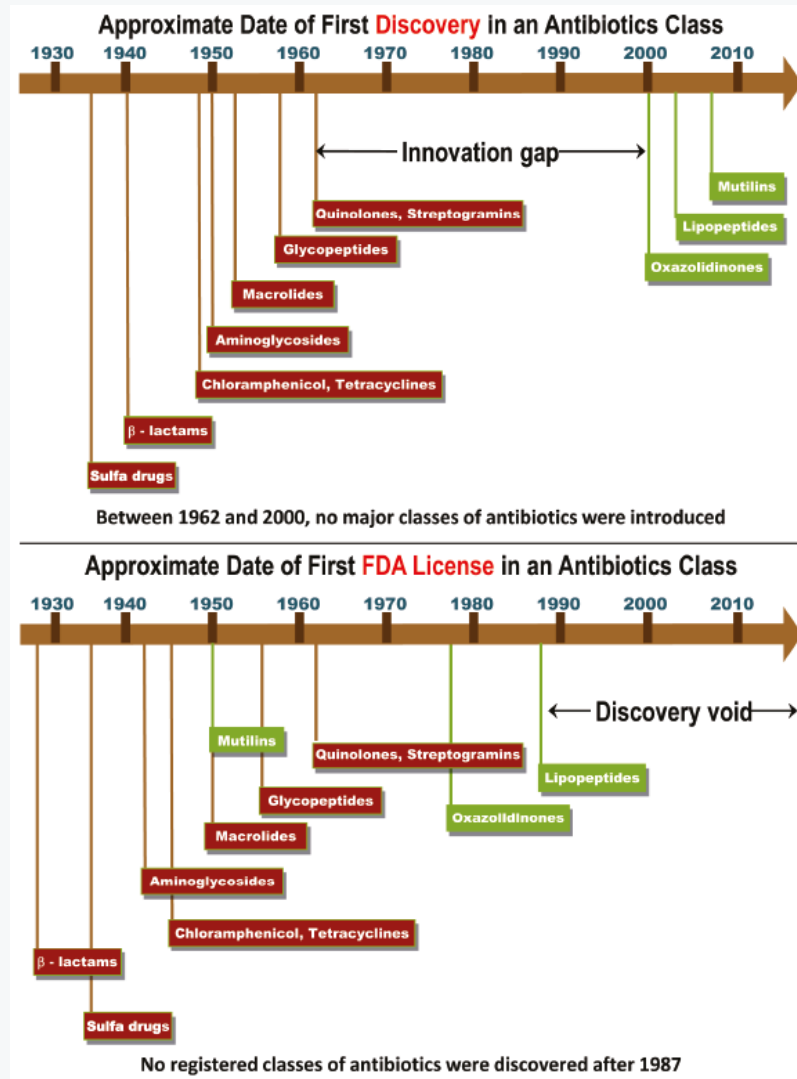
# What is special about DRIVE-AB

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- Team
- Innovative models to incentivise antibacterial drug R&D based on realistic data
- Involvement of all stakeholders
- Including responsible use of antibiotics
- Global scope
- Access

ND4BBB

# Innovation gap and discovery void



# Where is the innovation coming from?

Ceftobiprole (Zevtera)	Roche *	Basilea	←		
Dalbavancin (Xydalba)	Vicuron	Pfizer	Durata	Actavis	approved
Oritavancin (Orbactive)	Eli Lilly *	Intermune	Targanta	The Medicine Company	
Tedizolid (Sivextro)	Dong-A	Trius	Bayer/Cubist=Merck		
Ceftolozane+tazobactam (Zerbaxa)	Astellas	Calixa	Cubist=Merck		
Ceftazidime+avibactam	Sanofi *	Novoxel	AstraZeneca-Forest/Actavis		
Omadacycline	Paratek	Novartis (coll. discontinued)	Paratek	←	Ph 3
Solithromycin, oral, iv-oral	Optimer	Cempra	←		
Delafloracin, iv, oral	Wakunaga	Abbott	Wakunaga	Rib-X (Melinta Therapeutics)	←
TP-434 (=eravacycline)	Harvard University	Tetrphase	←		
Plazomicin	Isis	Achaogen	←		
Carbavance	??	Rempex	The Medicines Comp.		
Nemonoxacin (appr. Taiwan)	TaiGen	Procter & Gamble	Warner Chilcott	TaiGen	←
Radezolid	Yale University	Rib-X =Melinta Therapeutics	←		
BC-3781 (Lefamulin)	Sandoz/Novartis *	Nabriva	Forest/Actavis	Nabriva	← Ph 2
JNJ-Q2 (Avarofloxacin)	J&J (Janssen Pharm.) *	Furiex	Forest/Actavis		
PMX-30063 (Brilacidin)	Polymedix bankrupt	Cellceutix Corporation	←		
AFN-1252/Debio 1450	University of Toronto	Affinium	Debiopharm	←	
POL7080	Polyphor	Roche			

University/SME

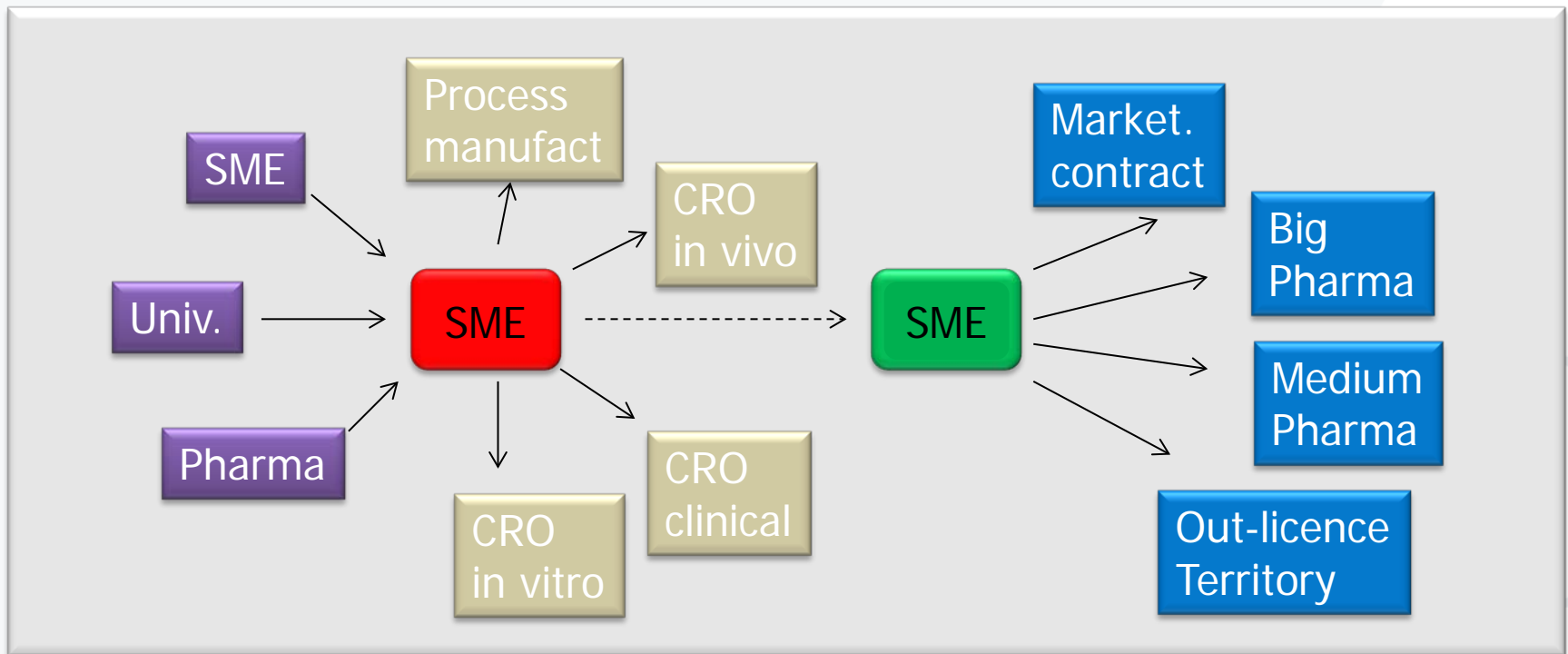
Large company (>500 employees)  
Global pharmaceutical corporation

\* More than 10 years ago

# Complex R&D networks

Past:

Integrated Pharma Company: discovery – development – marketing worldwide



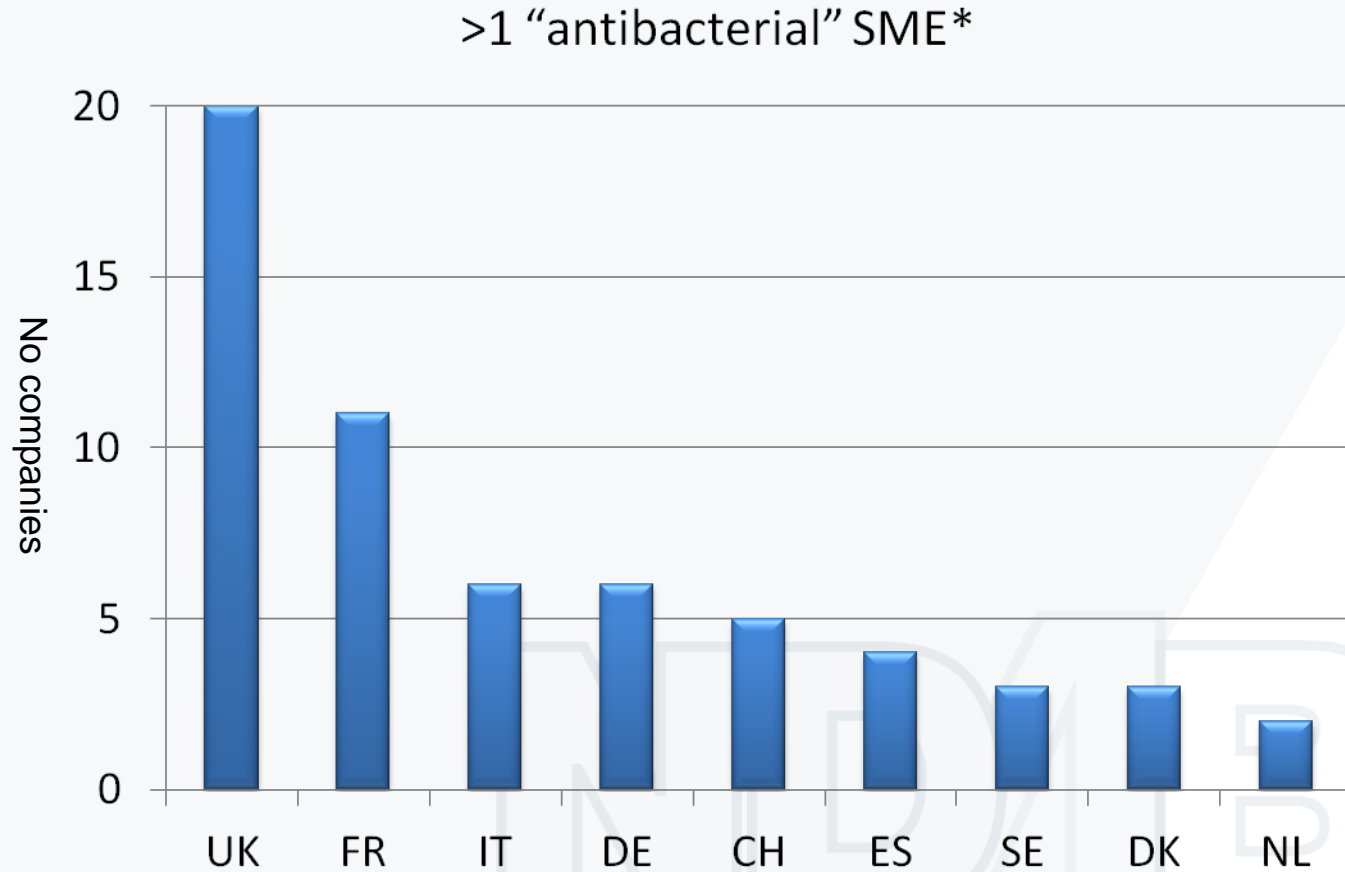
# Old and new business models (examples)

## Past: Big Pharma: discovery to global marketing

1. SME acquiring early stage compounds from Big Pharma or spin-off (rare today); late clinical development and marketing in Big Pharma
2. SME acquiring early compounds from Japanese companies and developing them outside Japan (more common in US, rare today)
3. SME discovery (usually from Universities) to max. Phase 1; clinical development and marketing in Big Pharma
4. SME discovery; SME clinical development; marketing in Big Pharma
5. Acquiring Phase 2/3 drugs; marketing in medium sized companies, not global (Cubist, The Medicine Company)
6. SME: from discovery to Phase 3 and marketing (newest trend)
7. VC portfolio companies (usually lower risk programs, more common in US)
8. Dual model: income from other sources

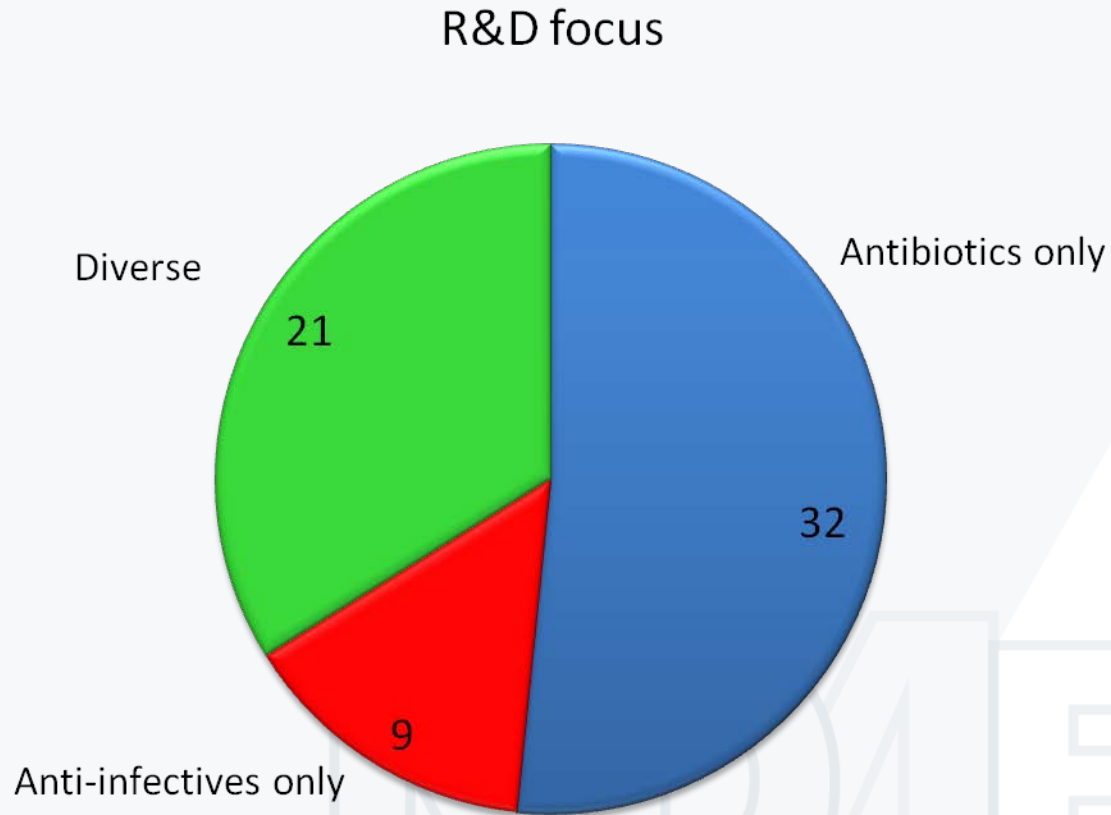


# Antibacterial drug R&D in Europe



EU definition + Debiopharm, Valneva, AiCuris

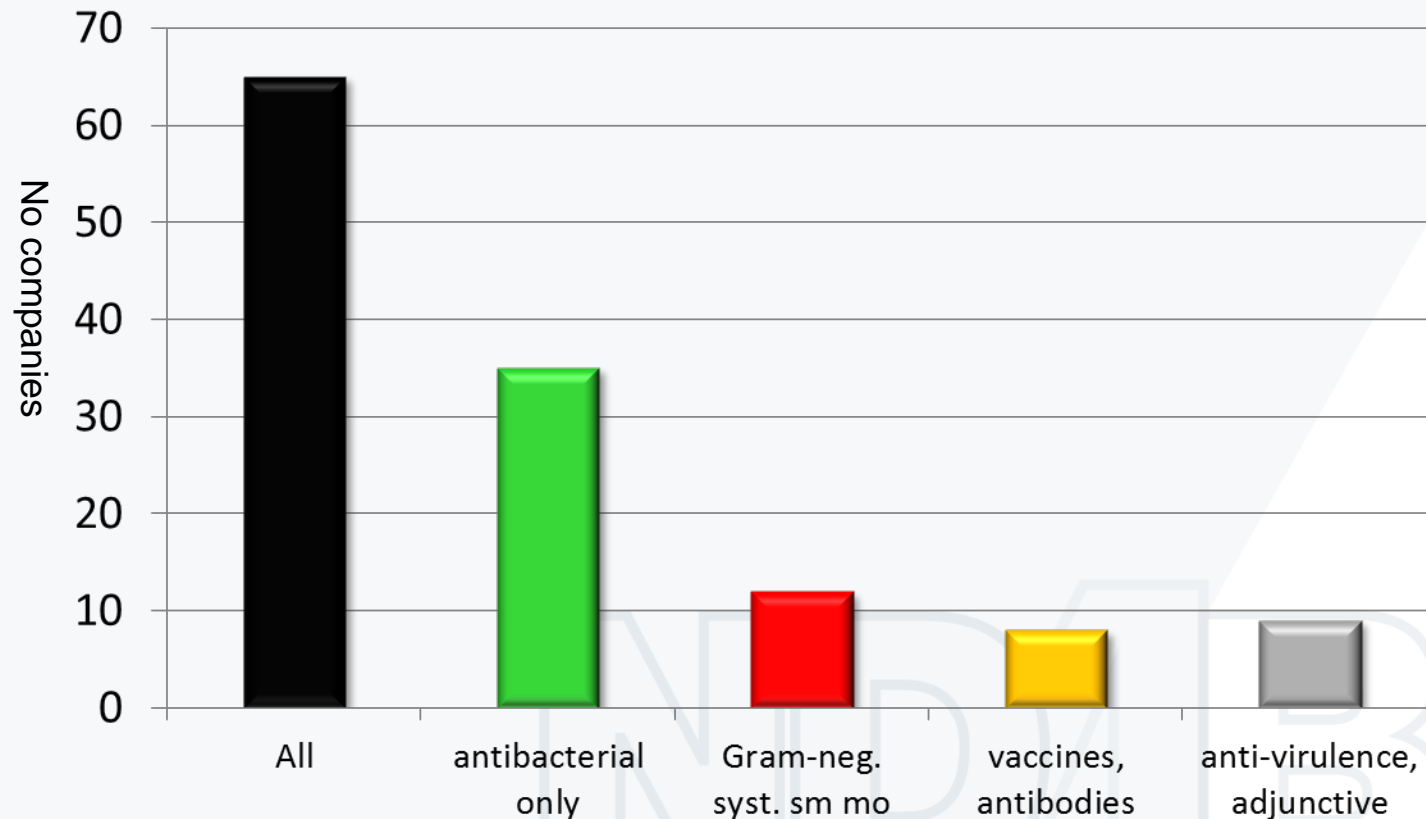
# Antibacterial drug R&D in Europe (SMEs)



Estimates based on the company database at CEFAIA

# Antibacterial drug R&D in Europe

## SME: Focus of activities

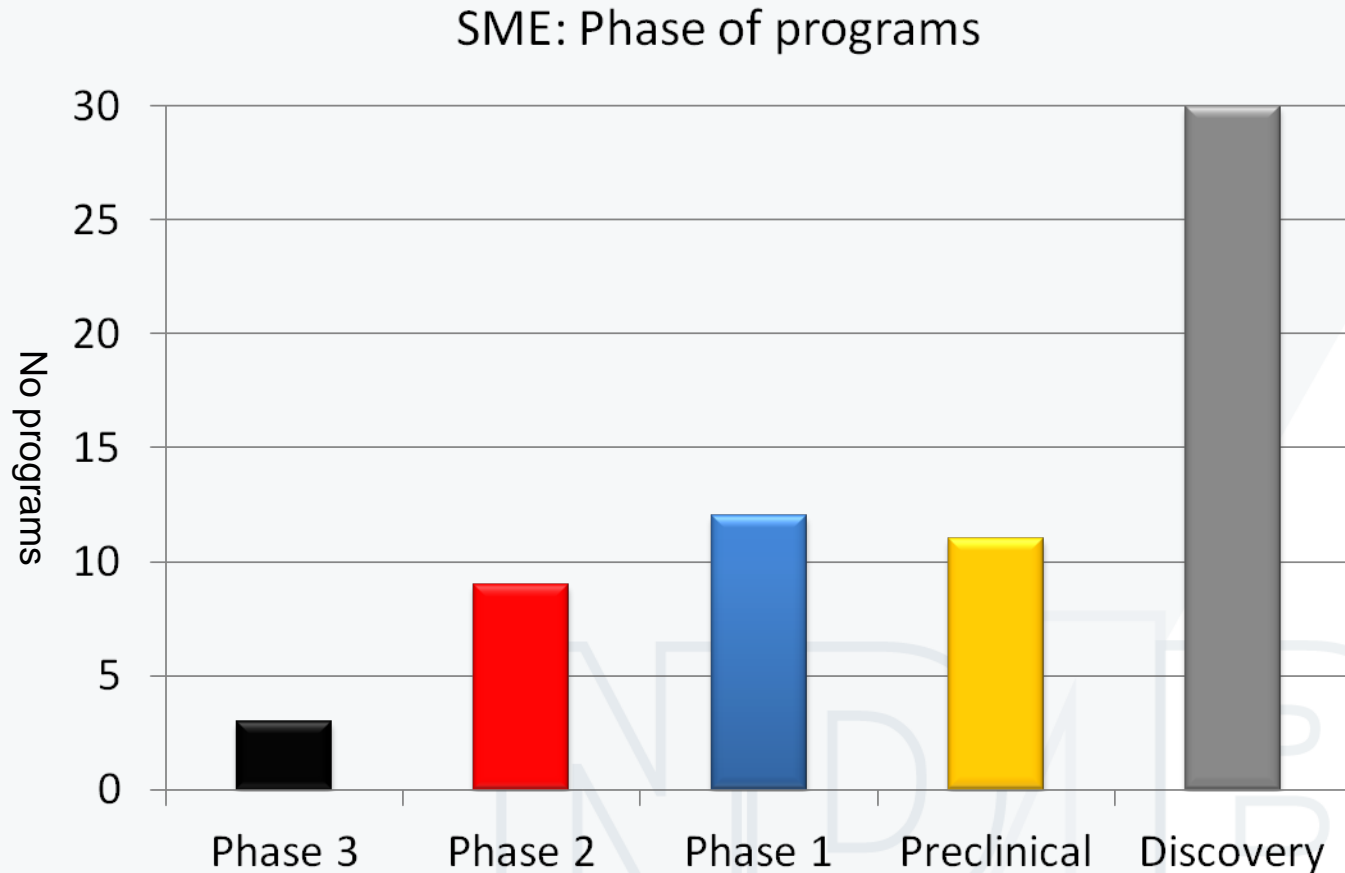


Antibacterial drugs: Small molecules, peptides, vaccines, anti-virulence, anti-resistance, adjunctive; systemic, topical

Sm mo = small molecule

Estimates based on the company database at CEFAIA

# Antibacterial drug R&D in Europe



Estimates based on the company database at CEFAIA