Contents

About the Authors xvii
Foreword xix
Preface xxi
Acknowledgment xxiii

Part 1 WHAT WE HAVE TODAY AND HOW WE GOT HERE 1

1 A typical food R&D organization: Personal observations 3
  1.1 Introduction 3
    1.1.1 Business people always know better 4
  1.2 A look back in wonderment 5
    1.2.1 Innovation is everyone’s business 5
    1.2.2 Let’s go and have a drink 6
    1.2.3 Never give up and continue to hope 6
  1.3 A look back to the beginnings of a typical food industry R&D 7
    1.3.1 It all starts with a great idea 8
    1.3.2 People were frightened 8
    1.3.3 Are we depleting our resources? 9
    1.3.4 Focus, focus, focus 10
    1.3.5 A historic perspective 11
    1.3.6 Let’s cut costs 11
    1.3.7 Food industry has simple and tangible goals 12
  1.4 From single and large to multiple and complex 13
    1.4.1 Nutrition has growing pains 13
    1.4.2 The new risk management approach: Many projects 14
    1.4.3 Too many projects? No problem, reorganize 15
  1.5 Why does the food industry need R&D after all? 16
    1.5.1 Million dollar answers to the million dollar question 16
    1.5.2 Here we go: Justifications 17
    1.5.3 Because we can is a great reason! 17
    1.5.4 New product development is everything, or is it not? 18
    1.5.5 Consumer is king 19
    1.5.6 It’s all about long-term thinking, stupid 20
  1.6 Summary and major learning 21

References 22
2  A typical food R&D organization: The world consists of projects  
2.1  All R&D work is project based  
2.1.1  Project has many meanings  
2.1.2  Third-generation R&D  
2.1.3  Strategic business units became popular  
2.1.4  Organization is everything  
2.1.5  Freeze the project design  
2.1.6  How free can you be?  
2.1.7  Small is beautiful  
2.1.8  Pipelines  
2.1.9  Try it out first  
2.2  Project management  
2.2.1  Manage or lead? Manage and lead  
2.2.2  Select the right project and deliver  
2.2.3  Teamwork is not everything, it’s the only thing!  
2.3  All projects are sponsored  
2.3.1  SBUs: The new, old kid on the block, happy anniversary!  
2.3.2  Accountability and responsibility: A “repartition” of roles  
2.3.3  SBU demands, R&D delivers  
2.3.4  A brief comes from above  
2.4  The predictable organization  
2.4.1  First ritual: Research the consumer  
2.4.2  From “business scenario” to “business plan”  
2.4.3  More rituals  
2.4.4  Projects never seem to die  
2.4.5  It’s all about results  
2.5  Valuation of projects  
2.5.1  Your project could have delivered more!  
2.5.2  That’s what others invest  
2.5.3  Sell your project better: Start by explaining it so that everyone can understand it  
2.5.4  Communication is king!  
2.5.5  Speed is everything  
2.6  Summary and major learning  
References  

3  A critical view of today’s R&D organization in the food industry:  
Structures and people  
3.1  A typical setup of a food R&D organization  
3.1.1  New idea? Let’s wait  
3.1.2  Food is a conservative beast  
3.1.3  Small is beautiful, or is it not?  
3.1.4  Ingredient is king  
3.1.5  Quality and safety are not everything, they’re the only thing!
### Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1.6</td>
<td>Technologies are always product related</td>
<td>51</td>
</tr>
<tr>
<td>3.1.7</td>
<td>What’s my project worth?</td>
<td>51</td>
</tr>
<tr>
<td>3.1.8</td>
<td><em>Cui bono?</em></td>
<td>52</td>
</tr>
<tr>
<td>3.2</td>
<td>The people in the food R&amp;D</td>
<td>52</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Do I stay, or shall I move on?</td>
<td>53</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Twenty percent! Are you out of your mind?</td>
<td>53</td>
</tr>
<tr>
<td>3.2.3</td>
<td>More hoppers</td>
<td>55</td>
</tr>
<tr>
<td>3.2.4</td>
<td>More stayers</td>
<td>55</td>
</tr>
<tr>
<td>3.2.5</td>
<td>Change can be frightening</td>
<td>56</td>
</tr>
<tr>
<td>3.3</td>
<td>The role of discovery and innovation in food R&amp;D</td>
<td>57</td>
</tr>
<tr>
<td>3.3.1</td>
<td>It’s all about discovery</td>
<td>57</td>
</tr>
<tr>
<td>3.3.2</td>
<td>It’s all about innovation, or is it renovation?</td>
<td>58</td>
</tr>
<tr>
<td>3.3.3</td>
<td>Size matters</td>
<td>59</td>
</tr>
<tr>
<td>3.3.4</td>
<td>Here’s a way out</td>
<td>59</td>
</tr>
<tr>
<td>3.3.5</td>
<td>What would the consumer say?</td>
<td>60</td>
</tr>
<tr>
<td>3.4</td>
<td>Additional personal observations and R&amp;D-related stories</td>
<td>61</td>
</tr>
<tr>
<td>3.4.1</td>
<td>The business project</td>
<td>62</td>
</tr>
<tr>
<td>3.4.2</td>
<td>The secret project</td>
<td>63</td>
</tr>
<tr>
<td>3.4.3</td>
<td>The pet project</td>
<td>64</td>
</tr>
<tr>
<td>3.4.4</td>
<td>The never-ending project</td>
<td>64</td>
</tr>
<tr>
<td>3.4.5</td>
<td>The trial-and-error project</td>
<td>65</td>
</tr>
<tr>
<td>3.4.6</td>
<td>The please-someone project</td>
<td>65</td>
</tr>
<tr>
<td>3.4.7</td>
<td>The defensive project</td>
<td>66</td>
</tr>
<tr>
<td>3.4.8</td>
<td>The knowledge-building project</td>
<td>66</td>
</tr>
<tr>
<td>3.4.9</td>
<td>Change is needed!</td>
<td>67</td>
</tr>
<tr>
<td>3.5</td>
<td>Summary and major learning</td>
<td>67</td>
</tr>
<tr>
<td>References</td>
<td></td>
<td>69</td>
</tr>
</tbody>
</table>

### 4 Understanding intellectual property and how it is handled in a typical food R&D environment | 70

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Quest for intellectual property: An important driver</td>
<td>70</td>
</tr>
<tr>
<td>4.1.1</td>
<td>Patents</td>
<td>70</td>
</tr>
<tr>
<td>4.1.2</td>
<td>Recipes</td>
<td>71</td>
</tr>
<tr>
<td>4.1.3</td>
<td>Trademarks</td>
<td>72</td>
</tr>
<tr>
<td>4.1.4</td>
<td>Trade secrets and secrecy agreements</td>
<td>72</td>
</tr>
<tr>
<td>4.1.5</td>
<td>Experts: Actions and results</td>
<td>73</td>
</tr>
<tr>
<td>4.1.6</td>
<td>Alliances and partnerships</td>
<td>74</td>
</tr>
<tr>
<td>4.1.7</td>
<td>Protect everything!</td>
<td>74</td>
</tr>
<tr>
<td>4.1.8</td>
<td>One last attempt</td>
<td>76</td>
</tr>
<tr>
<td>4.2</td>
<td>The value of intellectual property for a food company</td>
<td>76</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Poor principles in practice</td>
<td>77</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Change is on its way</td>
<td>77</td>
</tr>
<tr>
<td>4.2.3</td>
<td>Patents forever</td>
<td>78</td>
</tr>
<tr>
<td>4.2.4</td>
<td>Numbers and more numbers</td>
<td>79</td>
</tr>
</tbody>
</table>
4.2.5 And more numbers 79
4.2.6 Here are more and even bigger numbers 80
4.2.7 Is my patent actually profitable? 81
4.2.8 It’s all about brands! And about service level! 82
4.2.9 Good communication is key, great communication creates value 83

4.3 Intellectual property as the basis for industrial intelligence and counterintelligence 83
4.3.1 List everything 84
4.3.2 Technologies and people 84
4.3.3 Who are the experts? 84
4.3.4 Don’t ask questions, just fill in the form! 85
4.3.5 I want monthly highlights, although I don’t read them 86
4.3.6 Open up! 86

4.4 Commercializing IP assets 87
4.4.1 A good license deal is better than no license deal or so you would think 88
4.4.2 Licensing out most often is a deviation of the traditional business model of a food company 88

4.5 Summary and major learning 89
References 90

Part 2 POSSIBLE FUTURE OF THE FOOD INDUSTRY 91

5 The need for a new approach to R&D in the food industry 93
5.1 R&D in the food industry is inefficient: An analysis 93
5.1.1 Innovation at zero extra costs 93
5.1.2 Real changes are required 94
5.1.3 Small is beautiful; large becomes inefficient 95
5.1.4 The good, the creative, and the productive 95
5.1.5 What’s wrong with R&D? 96
5.1.6 I don’t know which half to cut! 96
5.1.7 Let’s eliminate every second word 97
5.1.8 Let’s do another budget cut 98
5.1.9 Innovation is key! 98
5.1.10 The secret: Combine sensible budget cuts with instilling a creative constraints atmosphere 99

5.2 R&D under the influence and guidance of consultants 100
5.2.1 Consultants sell you back your idea; What’s wrong with this? 100
5.2.2 It’s you or your boss who asked for help 101
5.2.3 Consultants well used can be of real help 101
## 5.2.4 Being coached is everything
5.2.5 How to bring it to the consultant

### 5.3 R&D under the tutelage and guidance of marketing and operations
  5.3.1 Marketing has greater leverage
  5.3.2 Marketing gives orders; marketing does not make compromises
  5.3.3 Operations act like a strict father
  5.3.4 A bit of humor
  5.3.5 Here’s one example
  5.3.6 Let’s be respectful with each other

### 5.4 Evolutionary change in a typical food R&D organization
  5.4.1 R&D is not alone in mediocrity
  5.4.2 Let’s change, gradually!
  5.4.3 Watch out for support and best timing
  5.4.4 Cyclical versus anti-cyclical
  5.4.5 From 10 make 1 or make 10: Which do you prefer?
  5.4.6 Let us team up!
  5.4.7 Change comes easy

### 5.5 Summary and major learning

## 6 Consumer perspectives for change to R&D in the food industry

### 6.1 The fast moving consumer goods industry (FMCGI)
  6.1.1 Fast, furious, and cheap!
  6.1.2 What consumers really want? The million dollar question, the billion dollar answer!
  6.1.3 Food should be all natural it should be all this…
  6.1.4 Food companies don’t like risks; they “wait them away”
  6.1.5 Lean and efficient: Don’t you get it?
  6.1.6 Mutual understanding is not everything; it’s the only thing
  6.1.7 Here are some ways out

### 6.2 The consumer in the center
  6.2.1 No risk, no fun, or else?
  6.2.2 What’s architecture got to do with this?
  6.2.3 In search of the ultimate answer
  6.2.4 Emancipate from the consumers!
  6.2.5 I think we may have the wrong people, oops!
  6.2.6 Observation and smart conclusion: Two successful siblings
  6.2.7 Observation is king
  6.2.8 What do I do with what I have seen?
  6.2.9 Tell the consumers, don’t let them tell you! At least try
  6.2.10 The ultimate downturn: Administrative processes
## Contents

6.3 The consumer-driven food R&D
- 6.3.1 The “a-ha” moment
- 6.3.2 Take the risk and become independent
- 6.3.3 And better back it up with successful results!
- 6.3.4 I want to play with my own toys and make my own rules

6.4 Consumer groups: The public opinion
- 6.4.1 Early warning is the name of the game
- 6.4.2 Oops, we got it wrong
- 6.4.3 Working together for the common goal: Consumer benefits

6.5 Summary and major learning

References

7 University perspectives for change to R&D in the food industry
- 7.1 How did we get to this?
  - 7.1.1 Why have “food science” and “food engineering” developed in parallel to mainstream science disciplines?
  - 7.1.2 Why does industry sponsor research
  - 7.1.3 IP “there’s gold in them there hills”: The intellectual gold rush
- 7.2 The “state of the art”
  - 7.2.1 What does the food industry know about academia?
  - 7.2.2 Academics: Three different ones
  - 7.2.3 Nutrition, medical science, claims, and regulatory bodies
  - 7.2.4 Getting money from governments via grants and awards
  - 7.2.5 Academics as consultants
- 7.3 Where are we heading?
  - 7.3.1 Reunification?
  - 7.3.2 Research as a marketing tool
  - 7.3.3 Crowd-sourcing solutions: Open innovation pros and cons
  - 7.3.4 Scientific publication in the future
  - 7.3.5 A multidisciplinary future
  - 7.3.6 How to collaborate better?
- 7.4 Summary and major learning

References

8 Industry perspectives for change to R&D in the food industry
- 8.1 A typical food industry set-up
  - 8.1.1 Branded products or private label?
  - 8.1.2 The food industry: A champion of complexity
  - 8.1.3 Some stories: Small food businesses and simplicity in their setup
  - 8.1.4 How it all started
  - 8.1.5 A bit of history: Strategic business units
  - 8.1.6 It’s getting really confusing now

References
8.1.7 One important change of R&D setup as a consequence of a changing business structure 162
8.1.8 What’s first: The chicken or the egg? 163
8.2 The food industry: An easy money-maker or a daily battle? 164
8.2.1 Marketing is really old, really, really old 164
8.2.2 Can the food industry turn to a new direction and new business model? Is a revolution possible? 165
8.2.3 Let’s do this together 166
8.2.4 Easy money or daily struggle? 167
8.3 Is the food industry really innovation driven? 168
8.3.1 Innovation in the food industry is rather an antique affair 169
8.3.2 IBM or Kodak: Which would you rather follow? 169
8.3.3 Change or perish! 170
8.3.4 Small is beautiful and creative 170
8.3.5 Change your business model 171
8.4 The perceived value of the R&D organization: It’s in the eye of the beholder 172
8.4.1 Why R&D is useless… 172
8.4.2 And why R&D is great! 173
8.4.3 It’s because of the tax man 174
8.4.4 The sense of urgency is really missing 174
8.4.5 “Good-weather” versus “bad-weather” managers 175
8.4.6 Constraint is good, smartly dealing with it is better 176
8.5 Summary and major learning 177
References 179

Part 3 DISRUPTIVE OUTLOOK FOR THE FOOD INDUSTRY’S R&D 181

9 Outlook to other industries’ R&D organizations 183
9.1 Introduction 183
9.2 Brief historical review 184
9.3 Let the journey begin: What we can learn from their players and industries 184
9.3.1 Google 184
9.3.2 Google X 185
9.3.3 Back to Google X and the future 186
9.3.4 Google Research 187
9.3.5 Google for Entrepreneurs (GfE) 188
9.3.6 Google Ventures 188
9.3.7 Westfield Labs: Designing the mall of the future 189
9.3.8 Attack on the the brick-and-mortar model by e-tailers Zappos and Amazon 190
9.3.9 The rise of social shopping 191
9.3.10 Traditional industries meet tech 193
9.3.11 The art of dating 193
9.3.12 Learning from the least sexy industry role model 194

9.4 Halftime 195
9.4.1 The lean startup methodology 196
9.4.2 The lean network approach: The nomad approach 196
9.4.3 R&D-I-Y 196
9.4.4 The IKEA effect 197
9.4.5 Open source 197
9.4.6 The street is your R&D lab 198
9.4.7 Projects to promote interdependence 199

9.5 Summary and major learning 199
References 199

10 Utopia or visions for the future: A new reality? 201
10.1 What if I had a magic wand? My first set of magic tricks 201
10.1.1 Abracadabra… 202
10.1.2 Integration across the borders in the food industry 202
10.1.3 Open innovation still remains much of a lip service approach 203
10.1.4 Brand strength is volatile 204
10.1.5 Store brands become more popular, or so it seems 205
10.1.6 Let’s join forces 205
10.1.7 We have to accept that there are problems out there 206
10.1.8 We need to take the consumers’ fears seriously 206
10.1.9 It’s so confusing out there, please help me! 207
10.1.10 The new business model 2.0 208
10.1.11 The R&D-centric company model 2.0 (equally applicable to model 2.1) 210

10.2 What if I had a magic wand? My second set of magic tricks 211
10.2.1 Change is inevitable in all areas! 212
10.2.2 The new product will be know-how 213
10.2.3 That’s what’s important for business model 2.1 214
10.2.4 Here are the details 215
10.2.5 Some calculations, just examples 216
10.2.6 The company can earn more with model 2.1! 217
10.2.7 More changes: A new type of employee 218

10.3 The new scientists and engineers: A new type of people 218
10.3.1 The new educational focus: Communicate 219
10.3.2 Choose your words and help me to understand 220
10.3.3 That’s what it takes 220
10.4 The new R&D organization 221
  10.4.1 Change is a risky business 222
  10.4.2 Here’s the list 222
10.5 Summary and major learning 224
References 226

11 Testing the hypotheses 227
11.1 Too good to be true or simply wrong? 227
  11.1.1 Let’s look at business model 2.0 first 228
  11.1.2 Let me take stock 228
  11.1.3 Model 2.0: It’s either all or nothing 229
  11.1.4 We don’t want to change anything; all is just perfect or is it not? 230
  11.1.5 It’s about time for R&D to jump into the driver’s seat 231
  11.1.6 What about business model 2.1? Too disruptive and outlandish? 232
  11.1.7 So, what’s bad about model 2.1? 233
  11.1.8 We better start the gradual transition today 233
  11.1.9 It’s all about people 234
  11.1.10 Selling the intangible: The new mantra 235
11.2 The new people: What does it mean? 235
  11.2.1 Really new people with a new level of education are needed 236
  11.2.2 And there has to be more 237
  11.2.3 Hiring by committee 238
11.3 Some case studies: Personal views 238
  11.3.1 Charlie and the chocolate factory 239
  11.3.2 It’s all about talking to clients 239
  11.3.3 Observe and learn; don’t impose and remodel 240
  11.3.4 Citius, altius, fortius 240
  11.3.5 Some reasons for the separation 241
11.4 Business model 3.0 for R&D 242
  11.4.1 Change was in the air 243
  11.4.2 A short commercial 243
  11.4.3 Change or perish 244
11.5 Summary and major learning 245
Reference 247

12 Summary, conclusions, learning, and outlook 248
12.1 The typical R&D organization in the food industry 248
  12.1.1 You are too old for marketing 249
  12.1.2 How it all started 249
  12.1.3 Why R&D? 250
  12.1.4 Everything’s a project 251
12.1.5 And here came the strategic business units 251
12.1.6 Clever project management 252
12.1.7 The role of the SBUs and how it influenced R&D 252
12.1.8 The rituals: Consumer research, business plans, and the project definition 253
12.1.9 A critical view of today’s R&D organizations in the food industry 253
12.1.10 People in the food R&D 254
12.1.11 Discovery and innovation: More projects 255

12.2 Understanding intellectual property 255
12.2.1 We want to own everything: Should we really? 256
12.2.2 Service: An added value for any food company 256
12.2.3 What are other companies doing? What is my company working on? 257
12.2.4 I want to know who stands behind the competencies 257
12.2.5 What’s my IP worth? 258

12.3 New approaches and perspectives for change 258
12.3.1 Something’s wrong in the state of R&D 258
12.3.2 Consultants: A necessary evil? 259
12.3.3 Lessons from marketing and operations 259
12.3.4 Evolutionary change in a typical R&D organization 260
12.3.5 How would consumers see changes in the food industry’s R&D? 260
12.3.6 Consumer research isn’t everything; sometimes it’s actually the only thing 261
12.3.7 Consumer groups and the public opinion 262
12.3.8 University perspectives for change 263
12.3.9 IP: The intellectual gold rush 264
12.3.10 What does the food industry know about the world of academia? 264
12.3.11 Nutrition, medical science, claims, and regulatory 265
12.3.12 Where to get the money from: The role of grants and awards 265
12.3.13 Academics as consultants 265
12.3.14 What’s the future direction? 265
12.3.15 Scientific publication in the future: Multidisciplinary future and collaboration 266
12.3.16 Industry perspectives regarding change in food R&D 266
12.3.17 Food and beverage companies are really old 267
12.3.18 Anticipate change or be forced to change 268

12.4 Outlook to R&D organizations in other industries 268
12.4.1 And the winner in the innovation competition is 269
12.4.2 The street is your lab 269
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.5</td>
<td>The vision for the future: Testing the vision</td>
<td>269</td>
</tr>
<tr>
<td>12.5.1</td>
<td>The new reality for the food industry’s R&amp;D and for the entire food industry</td>
<td>269</td>
</tr>
<tr>
<td>12.5.2</td>
<td>The new suggested business models</td>
<td>270</td>
</tr>
<tr>
<td>12.5.3</td>
<td>Brand strength is becoming increasingly volatile</td>
<td>270</td>
</tr>
<tr>
<td>12.5.4</td>
<td>We are not there yet</td>
<td>271</td>
</tr>
<tr>
<td>12.5.5</td>
<td>This change is going to be really tough</td>
<td>272</td>
</tr>
<tr>
<td>12.5.6</td>
<td>Testing the hypotheses: First model 2.0</td>
<td>272</td>
</tr>
<tr>
<td>12.5.7</td>
<td>What about suggested business model 2.1? Too disruptive and detached from reality?</td>
<td>273</td>
</tr>
<tr>
<td>12.5.8</td>
<td>Finally, here yet another business model 3.0 for the R&amp;D in a food company</td>
<td>273</td>
</tr>
</tbody>
</table>

Reference 274

Index 275