

Evidence of effective needs

- ✧ Laboratory experiments
- ✧ Field experiments
- ✧ Observational studies
- ✧ Randomized trials

A word cloud centered around the word 'Biotechnology'. The word 'Biotechnology' is the largest and most prominent. Other large words include 'genetic', 'DNA', 'cells', 'desired', 'organisms', 'bacteria', 'genetically', 'diseases', 'biological', 'processed', 'products', 'gene', 'also', 'treatment', 'living', 'field', 'process', 'extract', 'antibodies', 'recombinant', 'soybeans', 'pharmacology', 'quantities', 'hybridomas', 'oil', 'substances', 'laboratory', 'category', 'qualities', 'genes', 'monoclonal', 'common', 'corn', 'shelf', 'made', 'industrial', 'substance', 'processes', 'see', 'problem', 'splicing', 'cultural', 'animal', 'general', 'Hybrids', 'technique', 'way', 'systems', 'cancer', 'waste', 'produce', 'specially', 'acid', 'now', 'antibody-producing', 'manipulate', 'applications', 'break', 'agriculture', 'prolonged disorders', 'technology', 'product', 'manufacture', 'engineering', 'bacterial', 'growth', 'insulin', 'United', 'many', 'foods', 'use', 'medically', 'cloned', 'Livestock', 'treat', 'large', 'manipulation', 'insert', 'studied', 'resistance', 'nucleic', 'States', 'created', 'useful', 'Plants', 'involved', 'pests', 'fields', 'slicks', 'solution', 'includes', 'produces', 'called', 'interferon', 'increased', 'modified', 'development', 'similarly', 'drugs', 'attempts', 'normal', 'life', 'therapy', 'chronic', 'hormones', 'material', 'pharming', 'mass', 'experimental', 'problem', 'splicing', 'cultural', 'animal', 'general', 'Hybrids', 'technique', 'way', 'systems', 'cancer', 'waste', 'produce', 'specially', 'acid', 'now', 'antibody-producing', 'manipulate', 'applications', 'break', 'agriculture', 'prolonged disorders', 'technology', 'product', 'manufacture', 'engineering', 'bacterial', 'growth', 'insulin', 'United', 'many', 'foods', 'use', 'medically', 'cloned', 'Livestock', 'treat', 'large', 'manipulation', 'insert', 'studied', 'resistance', 'nucleic', 'States', 'created', 'useful', 'Plants', 'involved', 'pests', 'fields', 'slicks', 'solution', 'includes', 'produces', 'called', 'interferon', 'increased', 'modified'.











368

94

172

45

73

38

99

25

73

54

91

85

40

78

49

10

30

62

49

32

31

340

301

336

288

317

232

377

431

411

451

430

451

367

438

164

182

139

144

205

188

2.132

1.001

1.308

1.710

1.725

1.442

2.453

2.390

3.850

2.175

1.389

2.833

3.928

1.920

1.748

2.387

2.930

1.399

1.253

3.928

3.176

2.514

2.835

2.119

1.273

1.287

1.272

2.303

2.736

2.115

2.551

2.110

1.928

1.902

1.921

2.796

2.593

3.292

3.383

2.983

2.117

2.817

2.594

1.272

1.928

1.951

2.119

2.904

2.595

110

823

712

855

755

525

92

288

159

324

304

430

277

175

2.402

1.988

243

249

809

55

Evidence of effectiveness



- ✦ Laboratory experiments
- ✦ Field experiments
- ✦ Observational studies
- ✦ Randomized trials



Manufacturability & Quality



- ✦ Translation to a process
- ✦ Establishing standards
- ✦ Reproducibility
- ✦ Quality control / Six Sigma