

Use of ASTM Standards for Tissue Engineered Medical Products: Practices and Trends identified from Patent Literature

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- Analyzing current usage of ASTM standards for tissue engineering scaffolds would be beneficial in identifying needs for formulating new ASTM standards specific for TEMPs.

? PubMed or Patent, Sir?

Reporting of TEMP scaffold research results with ASTM standards

? Most cited ASTM standards for TEMP scaffolds

Results from patent literature review (on going study)

? Prolific patent filers: Industry or Academia?

Who files/owns patents on TEMP scaffold with ASTM standards?

? Clinical product area?

Which clinical product area has more patents on TEMP scaffold with ASTM standards?

? Patent filing trends: Growing or Stagnant?

Patent filings trends of TEMP scaffolds with ASTM standards

Use of ASTM Standards for Tissue Engineered Medical Products: Practices and Trends identified from Patent Literature

- ❑ Analyzing current usage of ASTM standards for tissue engineering scaffolds would be beneficial in identifying needs for formulating new ASTM standards specific for TEMPs.
- ❑ PubMed listed publications reporting the use of ASTM standards for TEMPs <20
- ❑ Wealth of information available in patent literature describing the use of ASTM for TEMPs

Table 1. Search strategy for identifying documents containing references to ASTM and TEMP scaffolds

#	Query string	Fields searched	PubMed hits	Patent hits
Q1	(biocompatible OR biomaterial OR tissue engineering OR bioengineering OR regenerative OR bioresorbable OR biodegradable OR cell seeded OR bioactive OR functional)	All text	1,045,116	6,929,007
Q2	Q1 AND scaffold	All text	11,509	116,493
Q3	Q1 AND scaffold AND ASTM	All text	5	1,929
Q4	TITLE-ABST-CLAIM(Q3)	title, abstract or claims	Not performed	321

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- ❑ 321 patents contained specific keywords in either the title, abstract or claims
- ❑ 195 patents were relevant to scaffolds for TEMPs with keywords used in context
- ❑ 64 patent documents were randomly selected for further analysis for this preliminary study
- ❑ 35 different ASTM standards were noted from patent literature

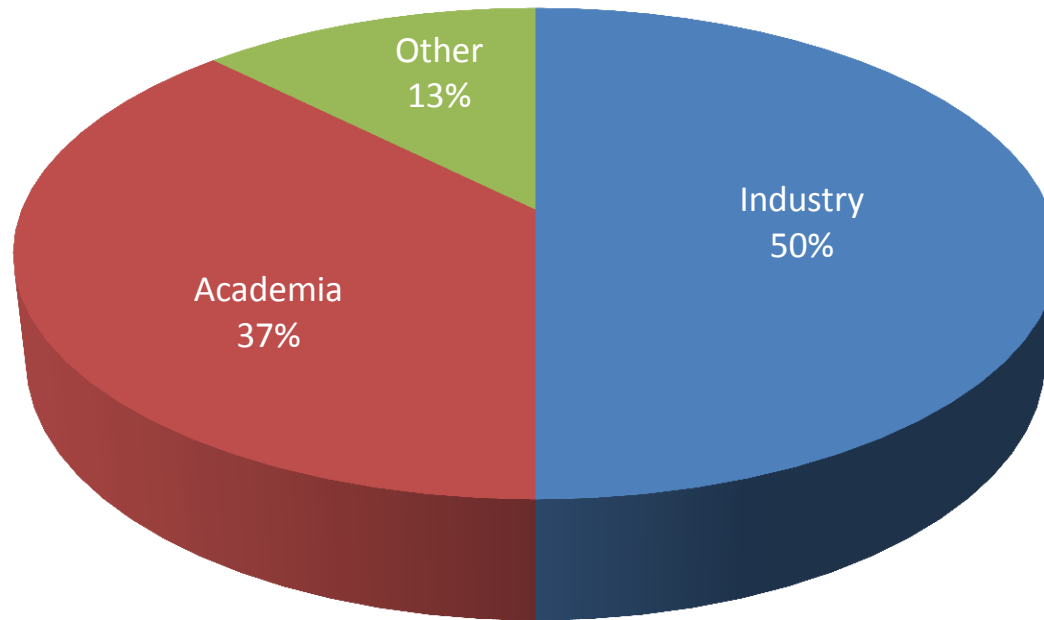
Table 2. ASTM standards used for TEMPs

D638	10	Standard Test Method for Tensile Properties of Plastics
D412	7	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
D695	7	Standard Test Method for Compressive Properties of Rigid Plastics
D3787	6	Standard Test Method for Bursting Strength of Textiles-Constant-Rate-of-Traverse (CRT) Ball Burst Test
F451	6	Standard Specification for Acrylic Bone Cement
D3574	5	Standard Test Methods for Flexible Cellular Materials—Slab, Bonded, and Molded Urethane Foams
E2149	4	Standard Test Method for Determining the Antimicrobial Activity of Immobilized Antimicrobial Agents Under Dynamic Contact Conditions
D1980	3	Standard Test Method for Acid Value of Fatty Acids and Polymerized Fatty Acids (Withdrawn 2007)
E1899	3	Standard Test Method for Hydroxyl Groups Using Reaction with p-Toluenesulfonyl Isocyanate (TSI) and Potentiometric Titration with Tetrabutylammonium Hydroxide
C830	2	Standard Test Methods for Apparent Porosity, Liquid Absorption, Apparent Specific Gravity, and Bulk Density of Refractory Shapes by Vacuum Pressure
D1746	2	Standard Test Method for Transparency of Plastic Sheet
D3418	2	Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry
D6797	2	Standard Test Method for Bursting Strength of Fabrics Constant Rate of Extension (CRE) Ball Burst Test
E1356	2	Standard Test Method for Assignment of the Glass Transition Temperatures by Differential Scanning Calorimetry

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Who files/owns patents on TEMP scaffolds with ASTM standards?

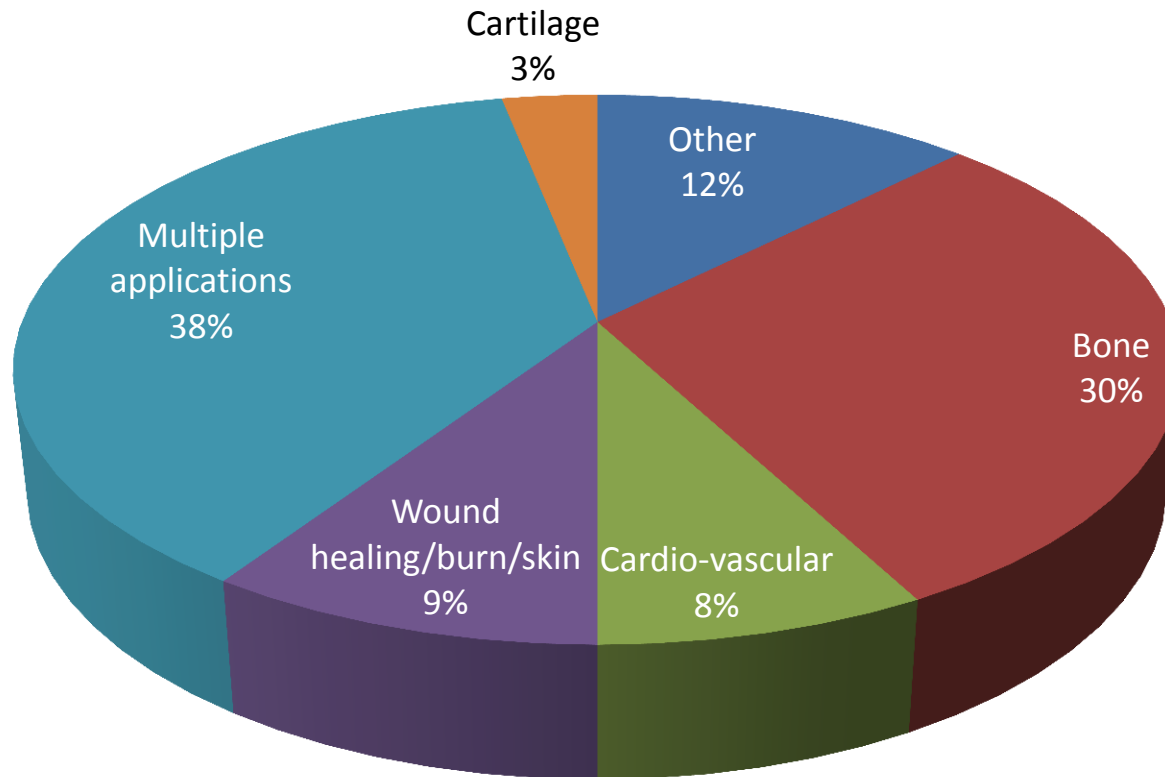
Patent ownership by type of organization (n=64)



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Which clinical product area has more patents on TEMP scaffold with ASTM standards?

Patents by type of clinical application



Use of ASTM Standards for Tissue Engineered Medical Products: Practices and Trends identified from Patent Literature

Number of patent filings of TEMP scaffolds with ASTM standards

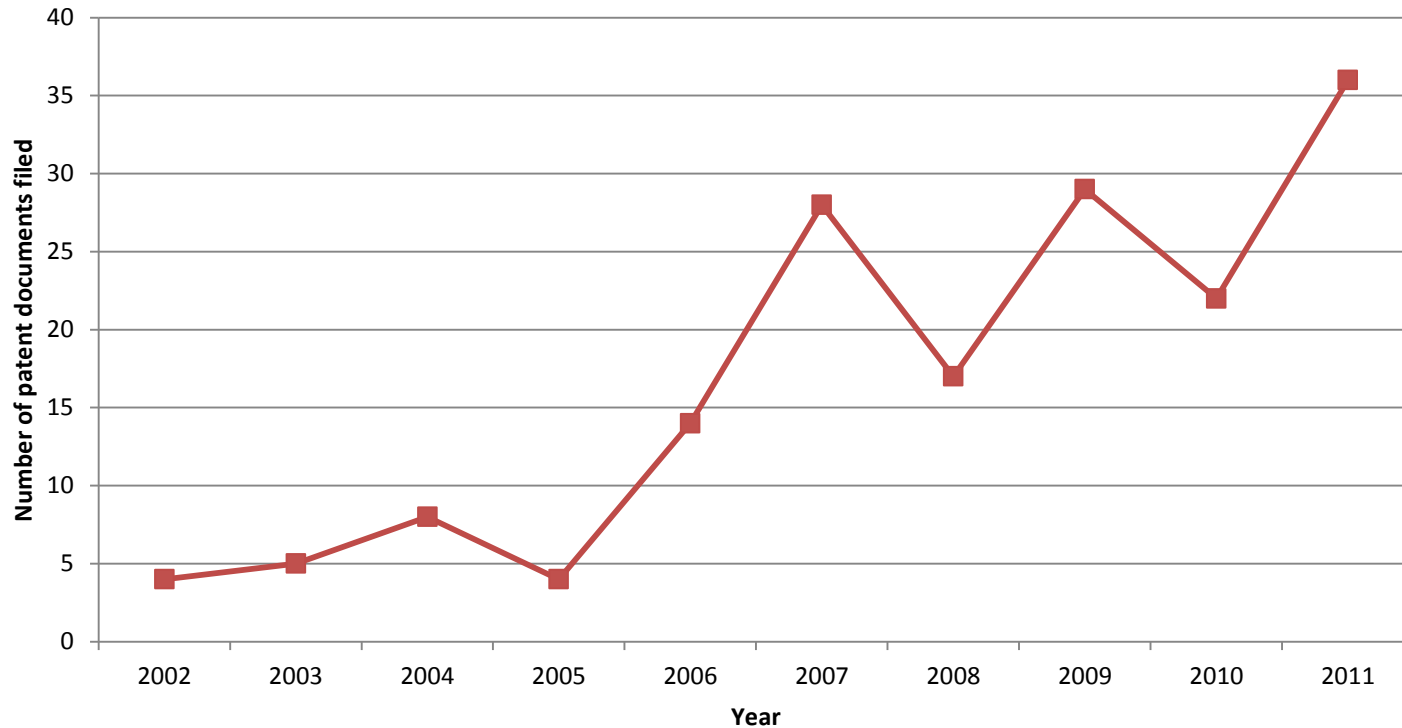


Figure 1

