nal data and cites no references published after 1994.

Studies show that milk from cows treated with rBST has a high concentration of insulinlike growth factor-1 (IGF-1), Epstein asserts. Furthermore, he argues, IGF-1 can increase humans' risk of developing breast and colon cancer. The protein occurs naturally in human blood and milk.

Among the studies Epstein reviewed are summaries released by FDA of six unpublished industry reports. They show that the concentration of IGF-1 in rBST milk ranges from 25 to 70 percent above the amount in milk from untreated cows, Epstein reports in the January INTERNATIONAL JOURNAL OF HEALTH SERVICES. Moreover, many studies used "flawed analytic techniques that underestimate IGF-1 levels . . . resulting in a potential 40-fold underestimate." Pasteurizing milk increases the IGF-1 content by 70 percent, he says.

Epstein cites studies suggesting that IGF-1 stimulates the growth of both normal and cancer cells. Evidence of its involvement in breast cancer comes from reports that blood and malignant tissue of breast cancer patients have high concentrations of IGF-1.

Epstein links IGF-1 to gastrointestinal cancer, citing laboratory studies that the protein, in amounts equivalent to those occurring in milk from untreated cows, stimulates the proliferation of intestinal cells. Adding IGF-1 therefore increases the possibility that milk will cause normal and cancer cells to divide in the human gastrointestinal tract, Epstein argues. Unlike most proteins, IGF-1 reaches the gut intact, without being broken down into amino acids, he claims.

"This is déjà vu all over again . . . it's amazing how many ways [Epstein] can try to say the same thing," asserts FDA spokesman Don McLearn.

"To raise unsubstantiated fears in people's minds is irresponsible," says Gary F. Barton, director of biotechnology communications for Monsanto in St. Louis.

IGF-1 "in human breast milk is at about the same concentration as that found in bovine milk" from treated and untreated cows, FDA's Richard H. Teske wrote Epstein in March 1994. Newer studies also show that milk from cows treated with IGF-1 does not have a high concentration of the protein, argues Stephen F. Sundlof, director of the FDA office that approved the drug.

Even if the milk had extra IGF-1, it wouldn't pose a risk, contends Sundlof. He disputes Epstein's claim that IGF-1 survives in the intestine. Moreover, other proteins in human blood would bind to and inactivate most IGF-1 that entered the bloodstream, he holds.

"There is no evidence that IGF-1 induces the malignant transformation of normal breast cells," Teske's letter argued. No such evidence has surfaced since 1994, Sundlof adds.   — T. Adler

Science Talent Search names 40 finalists

Forty high school students have been selected to compete for $205,000 in scholarships in the 55th annual Westinghouse Science Talent Search.

The finalists, chosen from 1,869 entrants at 735 high schools in the United States, plan to attend the Science Talent Institute from March 6 to 11 in Washington, D.C. There they will be awarded scholarships ranging from $40,000 to $1,000 at a ceremony on March 11.

The number of entrants this year ranks as the second-highest in the competition's history, surpassed only by the 2,075 students who competed in 1970. During the final judging in March, the finalists are scheduled to undergo intensive interviews by a panel of 12 scientists, including J. Richard Gott, an astrophysicist at Princeton University, and Dudley R. Herschbach, a chemist at Harvard University and 1986 Nobel laureate.

While the projects range widely across the sciences, including astronomy, medicine, and the social sciences, biology proved the most popular field among finalists, with seven entries. Mathematics ranked second, with five projects, and physics yielded four.

The 25 male and 15 female finalists, ranging in age from 16 to 18, represent 2.1 percent of total competitors and hail from 34 U.S. cities in 12 states.

This year's competition attracted high school seniors from all 50 states, the District of Columbia, and Puerto Rico. New York State produced the largest number of winners, with 16 finalists, 5 of whom live in New York City. California produced six finalists, and Virginia turned out four.

Stuyvesant High School in New York City yielded four finalists, the largest number for a single high school this year. It was followed by Stanton College Preparatory School in Jacksonville, Fla., which produced two.

"I am continually impressed with the caliber of work presented by these young scientists," says Alfred S. McLaren, president of Science Service, Inc., which in partnership with the Westinghouse Foundation has conducted the competition since 1942. "Their enthusiasm for learning and their dedication to finding scientific solutions to the complex situations that face us nationally and internationally should reassure us all that these truly will be leaders and teachers of tomorrow."

Among previous finalists, five have gone on to win Nobel prizes, and two have earned the Fields Medal, the highest honor in mathematics.

The 40 finalists are:

● California: Matthew Brian McCann, Alhambra H.S., Alhambra; Grace I-Chen Liu, Edison H.S., Fresno; Kevin Alfred Shapiro, North Hollywood H.S., North Hollywood; Christopher Chung-Tien Chang, Henry M. Gunn Senior H.S., Palo Alto; Connie Jean Ing, Saratoga H.S., Saratoga; Susan Jean Shaw, Villa Park H.S., Villa Park.

● Florida: Matthew David Graham and Vezen Wu, Stanton College Preparatory School, Jacksonville.

● Maryland: Mani S. Mahjouri, Atholton H.S., Columbia; Jacob Lurie, Montgomery Blair H.S., Silver Spring.

● Massachusetts: Rachel Stanley, Newton South H.S., Newton Center; Brian Palmer Hafler, Roxbury Latin School, West Roxbury.

● Michigan: Chandan Gopal Reddy, Detroit Country Day School, Beverly Hills.

● New Hampshire: Simon Joseph DeDeo, Phillips Exeter Academy, Exeter.

● New Jersey: Daniel Paul Weitz, Morristown H.S., Morristown.

● New York: Juliette Lee Taska, Lawrence H.S., Cedarhurst; Michelle Anne Schaffer, Commack H.S., Commack; Sidney Hsiao-Ning Chang, Half Hollow Hills H.S. East, Dix Hills; Michael Christopher Boyer, Manhasset Junior-Senior H.S., Manhasset; John Joon Tae Cho, Herricks Senior H.S., New Hyde Park; Ofra Biener, Townsend Harris H.S./Queens College, New York; Andre Michael Bishay, Bronx H.S. of Science, New York; Dmitry L. Sagalovskiy, Brooklyn Technical H.S., New York; Aaron Michael Einbond, Hunter College H.S., New York; Flora Fan Zhang, La Guardia H.S. of Music and Art, New York; Bruce Mizrahi Haggerty, Dudley William Lamming, Ting Luo, and James Park, Stuyvesant H.S., New York; Elizabeth Pollina, Ward Melville H.S., Setauket.

● Rhode Island: William David Garrahan, Bishop Hendricken H.S., Warwick.

● South Carolina: Andrew Cottrill Campbell, Spartanburg H.S., Spartanburg.

● Texas: Andrew MacGregor Childs, Texas Academy of Math & Science, Denton; Gregory M. Budunov, Smithville H.S., Smithville.

● Virginia: Paulina Susan Kuo, Thomas Jefferson H.S. for Science & Technology, Alexandria; Brian Michael Green, Yorktown H.S., Arlington; James Stevenson Clark IV, Rappahannock County H.S., Sperryville; Katherin Marie Slimak, West Springfield H.S., Springfield.

● West Virginia: Naomi Sue Bates, Franklin H.S., Franklin; Bonnie Cedar Welcker, Parkersburg South H.S., Parkersburg.   — R. Lipkin